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CLEVELAND, O. JUNE 14, 1928

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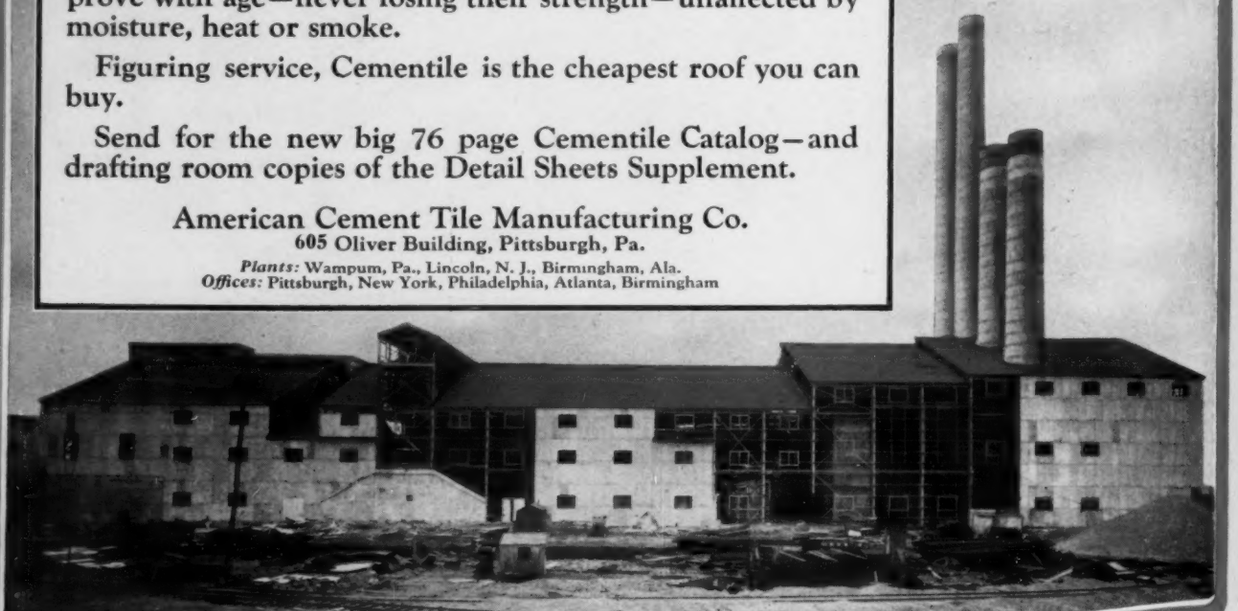

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IRON TRADE REVIEW

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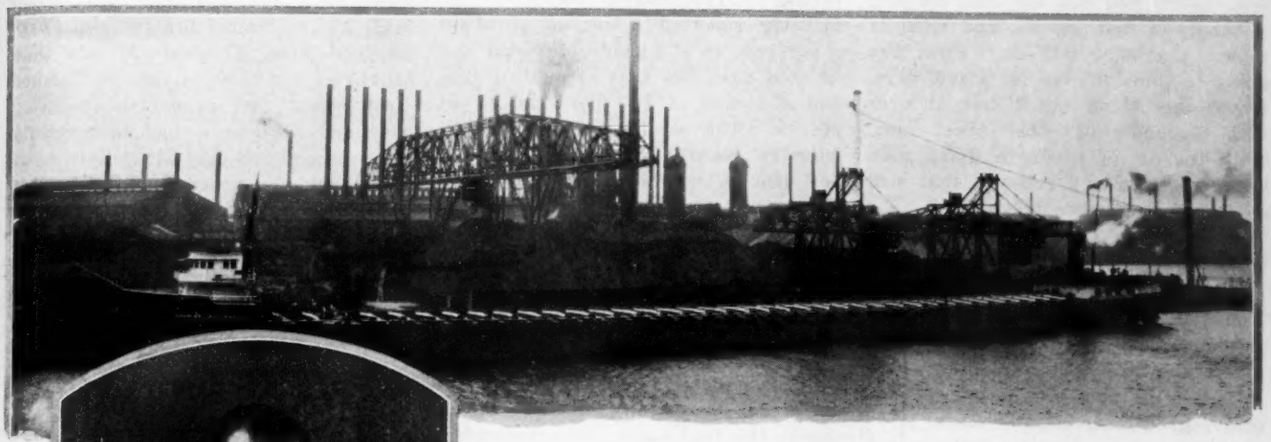


With mills operating at 75 per cent or more, many steelmakers are worrying over profits

WHOSE STEEL Industry Is It?

Customers Benefiting More Than Some of the Owners—Co-operation, the Way to Profit

By O. H. Cheney

GENTLEMEN, I am in the market for 10,000 tons of steel sheets! Now, please don't pull out your order books; I am only a hypothetical prospect with an imaginary order. I should like you to visualize me as one of your customers.

Here I am with this 10,000-ton order, and the first thing you think of is that you want it. It will probably be the last thing you think of. And how many of you will get very far away from that thought at any time? How many will really think through to the bitter end the reasons why I should give your particular mill the order? Or, why I should not? How many will refuse this order if my idea of specifications, delivery and price is such as to leave you an inadequate return for your effort?

Well, you take a look at me and decide that I play golf. Obviously, the way to get that order is to take me out to the club and let me win a couple of games. Things don't go very well, and I lose. Perhaps we had better stick to business so we join in a couple of rounds of ginger ale.

By that time we have known each other for seven years, or so it seems, and we call each other almost anything but our names. In fact, I know you so well that there isn't a mill in the world to which I would rather give the order than yours. That's why I'm giving you a chance which I wouldn't give to anybody else. You see, the fellow from one of the other sheet mills has quoted me 3.95 cents a pound for No. 24, A grade, metal furniture sheets, f.o.b. Pittsburgh, and your price is 4 cents. I'd like to give you the order, but you see how it is.

You see, all right. You see the mill man back home with his tongue almost hanging out crying

THIS thoughtful presentation of the steel industry's problems, and suggestions for their solution, are from an address delivered to the National Association of Flat Rolled Steel Manufacturers, in convention at White Sulphur Springs, W. Va., June 5. The author is vice president, American Exchange Irving Trust Co., New York.

for tonnage. Unless something happens, he'll be running 70 per cent of capacity, maybe less, and my 10,000 tons would just about make him delirious.

About that 3.95 quotation; let's pretend I'm an honest steel buyer and really did get it from the other fellow. Well, you call the mill on long distance, or tell me so, and whisper to me that 3.90 will do. Fine, I'm going to think it over for a few days. I not only think but I talk it over with a couple of other sheet men. With the air of giving a dying man a drink of water I tell you that still another fellow wants only 3.85.

That's not so good and you begin to think about what the big boss will say about margins. You tell me that your grade B sheets are as good as the other fellow's A, better in fact. You tell me that I've been a pretty good customer for years and you want me to be satisfied and a good customer in the future. I continue this for a couple of weeks and am on clubby terms with every sheet man in the district, and a good many outside. Finally. you'll let me have B grade sheets at 3.60; "and don't forget, they are better than anybody else's A stuff." I don't forget. I sign on the dotted line and send a letter of confirmation to the mill. Fortunately, you are out on the road when the vice president in charge of production receives it. He reads my letter, specifications, tolerances, clauses or rejections, schedule for delivery. I seem to have taken you seriously that your mill's B grade is better than the other follow's A, my specifications sound more like A plus.

Well, let me lower the curtain for a moment to indicate a lapse of time and intelligence. The accounting department brings the president a report. My 10,000-ton order has netted the stockholders $701.63—loss!

The figures may not be right for any particular sale, but the story is true, isn't it? At this very moment your salesmen are getting volume for you in this way, aren't they?

Whose plant is it, yours or your customer's? You needn't answer that question; the figures speak louder than words. Last year 20 leading steel producers, representing over 82 per cent of the ingot capacity of the country, earned 25.9 per cent less than in 1926. On a total stockholders' investment of nearly $3,000,000,000, these 20 companies earned 5.1 per cent as against 7.3 per cent earned in 1926.

Was this because the steel industry did not have enough business? You know that the volume was satisfactory, only a little under that of the previous year.

Did the little plants suffer more than the big ones in this struggle for volume? The leading factor in the industry reported a decline of about 9 per cent in shipments of rolled and finished steel last year as against 1926 and a decline of 24.7 per cent in net profits. The second company in the industry reported a decline of 21.8 per cent in net income.

In your own field of flat rolled steel an analysis of the records of nine important companies shows that the per cent of earnings to capitalization was only 5.27 last year. The year before it was 7.76 per cent. One company last year suffered a decline in net profits, as compared with the preceding year, of 53.6 per cent.

Are these declines due to rising costs? You know that the steel industry in the last few years has spent hundreds of millions of dollars in improving methods and cutting costs. One company has spent $150,000,000 in five years and as a result has been able to cut the average cost of production per ton of finished steel by $7.27.

Gave Away Its Savings

What happened to that $7.27? The average billing price of this company per ton of its finished and rolled steel has gone down $8.60 in the same five-year period. This steel producer, therefore, paid $150,000,000 for the privilege of giving away $1.33 with every ton of steel it made and sold.

A good many steel men have begun to say cynically, "Look at General Motors; look at the profits the automobile industry has been making." Look at General Motors! It made profits available for dividends of more than $235,000,000 last year, as compared with the less than $88,000,000 made by the United States Steel Corp. Suppose that General Motors had bought all the 3,500,000 tons of finished steel which the automobile industry used and suppose it had been wildly generous and had paid $10 dollars a ton more than you asked for it, it would still have had more than $200,000,000 profits left. Analyzing the operating finances of a group of over 100 steel consuming companies in ten leading lines, we find a percentage of earnings to stockholders' investment of 15.3, three items as high as that of the steel producers. In the case of the companies manufacturing automobiles, trucks and airplane the percentage is 24.9; in farm implements and tractors 10.6, and in office equipment 15.7. It is also true that the decline in finished steel prices has been pretty continuous for the past five years and that they have been during most of that period under the general commodity price level. While other industrial products have been 50 per cent above the prewar price level, steel has been at less than 40.

The vital question is: Does anybody really gain by these conditions? Are they necessary? Is the prosperity of the automobile industry, or of the construction industry, really dependent upon the adversity of the steel industry?

Must the steel industry go in rags so that the automobile industry may wear diamonds?

How long can the steel industry continue in a position of stress and strain in the economic unbalance in which it finds itself? It may be that such a condition naturally tends to right itself. No industry can forever hold its breath. There is such a sensation as economic "pins and needles" which comes from letting one or another economic member fall asleep. But it is strange how long our business system may appear to be generally prosperous and still include unprosperous industries. Some of the textile industries, for instance, have been living in a strange world for a number of years; prosperity all around them, but not theirs. What has happened? The

Alibi Overworked

EXCESS capacity has become a favorite alibi for American business men. . . . However, the real cause for price cutting is not in the mere existence of excess capacity, but in the blind grasping for volume to use that capacity.

* * * *

WITH all the frantic price cutting, the actual proportion of business done by each company is probably not materially changed. . . . How, then, can price cutting be stopped? Only by casting out the craze for volume; by scientific quoting of prices based on actual cost, plus a reasonable profit.

* * * *

THIS does not mean price fixing in any form. It does not mean "gentlemen's agreements." It can be done without violating any law, either in letter or spirit.

—O. H. CHENEY.

vital answer is in the recent wagecuts in some of the mills. And if these cuts become widespread, what will happen to the prosperity of the sections from which these industries draw their labor?

It is the paramount duty of all steel consuming industries and of all concerned with the economic wellbeing of the country to do their utmost to help the steel industry to restore its balance.

But, the present condition of the steel industry cannot be blamed on anybody but the steel men. They have it in their power to work themselves out of the difficulties into which they have placed themselves. They must have the co-operation of the steel consuming industries, but they cannot expect it until them have proved that they can use it constructively.

"Excess capacity" has become a favorite alibi for the American business men, and as soon as an alibl becomes popular I begin to be doubtful about its significance. A large proportion of of manufacturers are using it to justify price cutting and extreme tactics of competition. Most of them sincerely believe their complaint, their very sincerity has blinded them to the truth. Many industries, including the automobile industry, are making money in spite of excess capacity. I cannot think of a single industry which is not over-extended in plant.

The real cause of price cutting is not in the mere existence of the excess capacity but in the blind grasping for volume to use that capacity. It is estimated that your industry has about 25 per cent excess capacity; it would not really matter if the excess were 10 per cent or 50 per cent. Getting the extra volume does not get you any more profits; it gets you less.

We have been told that this is an era of big business and of growing business. The idea has become part of our economic creed that business must grow bigger and the bigger the better. I do not know just how this idea can be reconciled with the facts about the big companies in the steel industry. In the flat rolled steel field there have recently been some important mergers and others are probably on the way. The trend is inevitable in this line, because it is at present probably the least concentrated in the whole steel industry. In the production of shapes, for instance, the five leading producers have a combined capacity equal to 85 per cent of the total; in rails the percentage of the five leaders is 81; in plates 74; in tubular goods 66, and in sheets and black plate, only 42.

Consolidations in the flat rolled field are inevitable, but I do not believe that combining plants will have very much, if any, effect on existing capacity. Mergers could be of some value in preventing immediate and unnecessary increase in capacity, although even that is doubtful.

But how can this price cutting be stopped? Only by casting out the craze for volume at any cost and the fear of not getting the volume. This means the scientific quoting of prices based on actual costs plus a reasonable profit. It means sticking to quotations. It means going after only a reasonable proportion of the total business, based on the average for previous years, and being satisfied with that volume. It means sticking as much as possible to your own economic territory instead of trying to flood the country. It means getting a reasonable volume of business by sane and ethical methods and making sure of a legitimate profit on it.

This does not mean price fixing in any form. It does not mean "dividing up the business". It does not mean gentlemen's agreements. This can be done without violating any law either in letter or spirit. The one price policy revolutionized retail merchandising; it can revolutionize the steel industry. The best way to carry out a one-price policy is to forget competition. Know your costs, know your base price, know the extra for each type of steel, and ask for what you know is reasonable.

After all, what the steel industry is really paying its heavy cost for its swapping business. It is as economically sound as taking in each other's washing. The present method of doing business does not add one ton to the total volume. With all the frantic price cutting, the actual proportion of business done by each company is probably not materially changed, certainly not enough to cause the loss of profits. Would it not be much simpler to stick to a normal proportion and to try to get it as near home as possible?

The only sound way to increase the volume of each company which deserves to exist is to increase the total volume of steel sold, to extend its use, to improve it so that its service may be extended.

Here are two definite programs which offer the only solution of the steel industry's problem, and both of them demand the form of close co-operation which is known as the trade association.

* * *

LAST year the decrease in output of flat products was not quite as high as in finished steel generally, but in the past seven years, the proportion of rolled steel to ingot production declined in spite of increase of over 1,600,000 tons. Between 1920 and 1927 your line has undergone vital changes and the next seven years will probably see even more vital ones. In production, bands have declined over 65,000 tons and hoops over 150,000, nearly a half; strip steel has more than doubled while tin mill black has had a slight increase; in the higher gages of sheets the gain is over 1,000,000 tons and in the lower gages about 15 per cent. Less than three-quarters of last year's sheet industry was in existence in 1920. Who can say what the figures will be in 1934? The one who can will be the one who makes money.

"What do I care about the heavy plate maker or about the light gage market?" says the sheet specialist. And one day he discovers that his market does not belong to him. The industry is so flexible that when the producer of plates finds the demand for oil tankage light, he adapts his mills and sends his salesmen out after customers. When the can industry is slack, your competition increases from that direction. The flat rolled producers are invading the castings and

(*Concluded on Page* 1547)

Suggests Solution

THE one-price policy revolutionized the retail merchandising; it can revolutionize the steel industry.

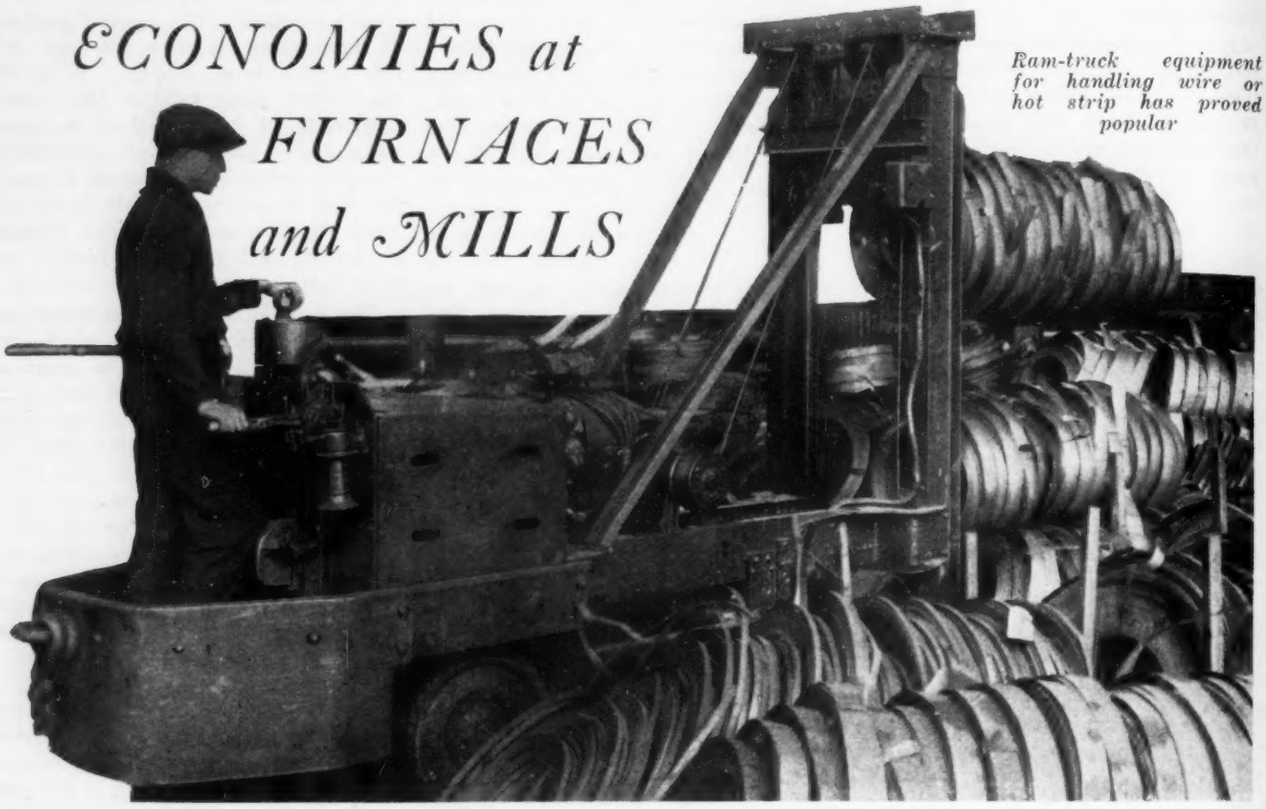
* * * *

THE only sound way to increase the total volume of each company which deserves to exist at all is to increase the total volume of steel sold, to extend its use, to improve it so that its service may be extended.

* * * *

THE two weapons in winning new markets are research and education. Two definite programs which offer the only solution of the steel industry's problems demand the form of close co-operation which is known as the trade association.—O. H. CHENEY.

TRUCKS Introduce Operating ECONOMIES at FURNACES and MILLS



Ram-truck equipment for handling wire or hot strip has proved popular

IMPROVEMENT in transportation methods often offers most promising possibilities for savings in the iron and steel industry. This may be partially accounted for on the basis of two facts: (1) that in the past gaps not capable of being filled by heavy, high capacity equipment have not received their fair proportion of attention, and (2) that up to the time when the cost of labor began to soar, boards of directors were inclined to favor appropriations for major changes in process equipment rather than relatively insignificant budgets for patching up the leaks in faulty transportation operations when recommendations were made in this connection.

The quantity of materials handled at a modern blast furnace is large. From the material handling standpoint, there are three types of furnaces: (a) hand-filled elevator furnaces, (b) skip-filled furnaces without larry car equipment and (c) skip-filled furnaces with larry car equipment. At the first two types of furnaces industrial trucks may be used to advantage in speeding up the charging, reducing the labor expense and relieving a shortage in a specialized type of labor.

In the earlier types of elevator furnaces, the charges are handled in two-wheel buggies. These buggies are pushed from the storage bins to the elevator at the furnace and then lifted to the charging stage, where two men empty them into the charging bell. One of these buggies loaded with ore weighs from 1400 to 1600 pounds, and the man who pushes this load comes under the heading of selective labor. He is especially trained for this heavy work and his muscles have become hardened to it. This class of labor is very scarce and it is very difficult to break in new men.

ABSTRACT by permission, from "Profitable Application of Electric Industrial Trucks and Tractors in Industry," published by the Society for Electrical Development Inc. The booklet was edited by H. J. Payne, survey committee, American Society of Mechanical Engineers.

Five furnaces of one concern have been equipped with trucks and a brief description of the work being done will supply useful data for working out similar problems.

At the time when equipped, the first furnace was of the hand-filled type first mentioned. Between the wheels of each of the old buggies, a subframe made of angle iron was built. This structure was placed about 12 inches from the ground, allowing sufficient clearance for handling with a standard elevating platform truck. The buggies were picked up at the elevator, carried to the ore pocket and returned to the elevator.

This scheme has been modified to use four standard dump trucks.

When hand buggies were carried by the elevating platform trucks, however, a total of six trucks with 13 operators is said to have replaced 54 specialized laborers.

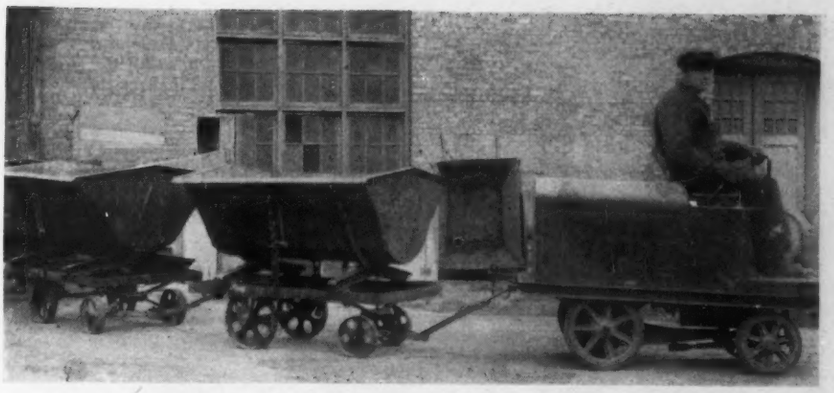
Another furnace, turning out 510 tons of pig iron per day, is of more modern type and is equipped with a skiphoist for mechanical charging. There are 39 charges per day split up into 79 sections, each consisting of 26,000 pounds of ore, 6500 pounds of stone and 13,000 pounds of coke. The ore and stone is being handled by three trucks with end dump bodies, which have replaced seven men and buggies. Two trucks are used for handling coke. This makes five trucks in all to handle the charging. These trucks require 15 operators for the

three shifts, who can be recruited from almost any class of labor as against 45 specialized laborers, who are difficult to obtain.

A Pittsburgh furnace uses 32 cubic feet capacity side dump bodies on straight platform trucks for charging. When 600 tons of ore are being charged per day a single truck does all of the handling. The average distance from bins to hopper, where the loads are dumped into the double skiphoist, is approximately 75 feet. In the runway from bins to skip there is a clearance of only 52 inches, but no difficulty has been experienced in operating under this condition. Aside from tires, that are replaced once in eight months, and regular lubrication, no outlay or maintenance has been required.

It is known that a single truck makes a saving of four men per turn. Although three trucks were purchased for this job it is only rarely that more than one is used at a time. The entire investment made, however, amounting to about $10,000, was written off after four months of operation. In addition to direct savings, it has been found that this method of handling ore has made it possible to get rounds in regularly, thus increasing the uniformity of operation and of product. Moreover, labor turnover has been diminished.

The battery with which each truck is equipped is sufficient to operate the truck for one eight-hour shift and one extra battery is therefore necessary for each truck in regular operations. The cost of operating such an installation, exclusive of the drivers, but including depreciation, interest on the investment, maintenance, and charging current is approximately 50 cents per truck per hour. Because this is a heavy 24-hour a day operation to avoid risk of breakdown, it is considered good practice to purchase a spare truck for every three or four trucks normally required.



Electric tractors with dump-body trailers are favored for handling ashes

Transportation needs of the open-hearth department are such that it has seemed unwise to recommend the industrial electric, except for special jobs. For handling ashes from producer plants and from coal fired boiler plants, several installations of the industrial electric have been made.

Removing Ashes from Soaking Pits

An installation in a blooming mill was made at the soaking pits of a Pittsburgh plant some time ago. A truck equipped with a V-dump body was put on a wheelbarrow job that consisted of carrying ashes and scale from beneath the pits, up a heavy ramp, to a dumping platform. For several years this equipment was in operation, earning a sum equivalent to the wages of eight hand wheelers. Since the summer temperature beneath the pits frequently exceeded 130 degrees, Fahr., the change made it much easier to keep abreast of the job.

Slabs for plate rolling are handled with a specially designed chisel truck by an Ohio concern, where equipment of this kind has been in use for nine years. This company purchases slabs receiving this material in gondola cars. From four to six slabs are carried at a time by the trucks, depending upon their size. They are unloaded from the railroad car by crane, placed on truck by hand and later removed from the truck by hand in the storage yards, about 150 feet distant. Each slab has to be handled at least twice from incoming car to storage and thence to furnaces.

In rod or strip mills an unusual opportunity for large savings exists through the use of truck equipment. Wire, as it comes hot from the mill, is heavy, bulky and awkward to handle.

A few years ago, when it was first proposed to put ram trucks in the hot strip department of a mid-west steel mill for carrying the hot rods

Handling of sheet steel or tin plate in warehouse and on the shipping platform is economically performed with truck and trailer

Trucks of this type are adapted to miscellaneous transporting of billets, slabs, wire, etc.

of metal to the cooling floor, the superintendent said flatly: "If trucks come here, I go out." To him it seemed suicidal to attempt to do the job with machines so much larger than the hand trucks to which he had become accustomed. It is enough to say that the trucks came and the superintendent stayed. Six months later he said, "These machines can't be taken away except over my body."

The product from two hot strip mills had been taken care of formerly by four gangs of three men each. As fast as the hot rods came from the rolling mills they were wheeled away by hand. Periodically, it was necessary to shut down the entire plant to clear up the storage floor because of congestion, and a large amount of product had to be scrapped because of spoilage through this handling.

The installation of ram trucks for carrying away the rods did not solve the problem immediately because of the congestion existing at the time these machines were put into service. However, within a few weeks conditions began to improve; periodic shutdowns were eliminated and the earning power of the trucks became so high that they were paying for themselves once every month out of savings.

On Sundays, when the rolls on the cold machines are changed, one of the ram trucks, fitted with a special key in the end of the ram, is used for handling them. In a Cleveland plant a crane truck is used similarly.

The handling of black sheet, plate, etc., has perhaps received much attention on the part of manufacturers of electric truck equipment. At one plant where six men formerly were used for pushing buggies loaded with three to four tons of sheets a distance of 100 to 150 feet and including a slight upgrade, a single tractor proved its ability to move as much tonnage, in 5-ton loads, as previously had been handled by a force of 22 men.

With approximately 1,750,000 tons of tin plate going out annually from American rolling mills where every sheet has to be handled eight to 12 times and with four or even more additional handlings required for every sheet before it emerges as a tin can or other container, the problem of handling efficiency is of the first order.

Uses Special Type Truck

A concern formerly spending $5.75 per car for unloading tin plate, reduced this figure to $3.25 through the use of a special fork truck. Where the haul from car to storage is considerable, the truck loads one or two trailers, pulls them to storage, unloads them and returns.

The unit loads that can be readily handled with the truck run from 2500 to 5000 pounds. These units are separated by 2 x 2-inch wooden or metal strips. A lift of 53 inches is the limit for trucks designed to work in and out of 6-foot 3-inch freight car doors or 62 inches for 7-foot doors, but trucks for warehouse service exclusively handle loads of heights of 7 or 8 feet.

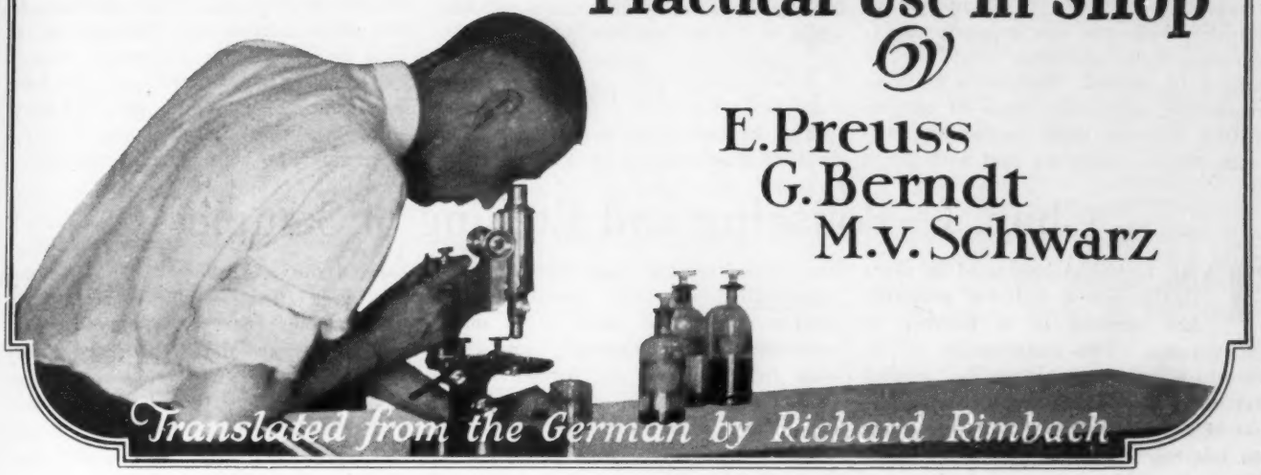
Sometime ago a survey was made to ascertain the average cost of handling tin plate, with hand trucks, at hourly or piece rates, manually as against handling with a fork type truck. These figures are on the basis of 100 base boxes.

	Hand trucks	Power truck
Handling loose tin plate in and about plants	14-16c	4½c
Handling loose tin plate from plant to car or vice versa	16-19c	8½c
Handling boxed tin plate in and about plants	12-14c	4½c
Handling boxed tin plate in and out of cars	15-17c	8½c

In this outline of the handling problems of the tin plate industry no mention has been made of the use of the electric for moving bosch trucks. The installation of two tractors at one plant having a sheet tonnage of between 300 and 350 tons per day, has replaced seven men. The work consists of handling the bosch trucks loaded with pickled sheets from the pickler to tin stacks and returning the empty trucks to the pickler.

Handling of coiled steel products has been greatly simplified by this type of truck equipped with hook for magnet

Metallography Simplified for Practical Use In Shop



By

E. Preuss
G. Berndt
M. v. Schwarz

Translated from the German by Richard Rimbach

Preface

THE investigation of metals, especially of iron and steel, by etching polished sections and investigating the crystal structure with the aid of a simple and inexpensive industrial microscope, which permits a magnification of 50 or 100X, in many instances permits drawing extraordinarily important conclusions in regard to the particular material—its quality, its manufacture, its working, causes for its failure, etc. The methods of investigation, in so far as they do not deal with especially exhaustive investigations, are so simply and quickly made that they can be carried out in the ordinary machine shop without special laboratory equipment. In spite of this, the author during his activity as materials engineer has repeatedly had the experience that even the most simple tests of this kind were practically unknown to the engineer, despite the small amount of necessary prerequisite knowledge and the ease of making them. The reason for this probably is the fact that metallography is a new, young science, which the engineer active in his profession at present, had heard nothing of in his period of training. One does not easily acquire knowledge by experience in later years in a branch of science for which the foundation had not already been laid during his training, and in fact this is much more difficult, if, as in this case with metallography, new expressions strange to the novice and difficult to understand are used.

Actually though, simple and easily understandable relations are dealt with, if one only desires to carry it but as an inexpensive and useful aid to the machine engineer, especially the operating engineer in recognizing and testing materials. That is the object of this book. It is not intended as a textbook of metallography and to enter into competition with the many good books already available on this subject. It should show the engineer, particularly the machine designer, how simply this branch of science can be used for the manifold purposes of his activities and how he can carry out most investigations himself, without the aid of a specialist. Beyond this, the book is intended to give directions as to how metallography can be used in difficult cases, in which the assistance of a specialist is necessary. The book corresponds to the lectures and experiments on metallography, which the author gives for machine engineers at the Technical high school of Darmstadt, in order to make metallography of use to them for their purposes. In keeping with its purpose, the book therefore avoids, in as far as it is possible, theoretical discussion; it follows a straight path into actual practice. To arrive at its goal, it makes use of a great number of illustrations and wherever necessary gives detailed examples. To achieve the object which was set, naturally the most suitable sketches and illustrations were chosen. Therefore, in addition to the researches of the Materials Testing institute of the Technical high school

New Serial on Testing by Macroscopic and Microscopic Examination

IRON TRADE REVIEW has secured the complete rights for publication in the English language of the well-known book on the practical application of testing iron and steel by etching and with the aid of the microscope by E. Preuss, G. Berndt and M. von Schwarz. Heretofore this work has been available only in German and therefore has had only limited circulation in England, the United States and Canada.

The English translation, prepared by Richard Rimbach, Pittsburgh, will be published serially in IRON TRADE REVIEW, the first instalment appearing in this issue. A table of contents appears on a succeeding page. This book is written in a simple straightforward way and is intended not as a textbook but as a guide to the manufacturer whose facilities are limited to the minimum and simplest of equipment. For the practical man, this information should prove most helpful.—*The Editor.*

of Darmstadt a number of sketches and illustrations were taken from current literature. They constantly referred to the reports of the Imperial Material Testing bureau at Berlin-Gross-Lichterfelde-West and also the researches of Profs. E. Heyn and O. Bauer, which one can properly designate the "Crystallization point" of this branch of science. Reference to these researches, especially those of the institute, appears most appropriate, because these researches deal with problems which are in closest connection with the practical requirements of the engineer.

In so far as the works of other authors were used, this was done with their permission, for which the author expresses his thanks at this time.

Darmstadt, July, 1912.

DR. ING. E. PREUSS

The preface to the second edition in 1920 was written by Profs. Berndt and Cochius as Preuss was killed during the war. All that is mentioned in this preface is the excellent work of Preuss in the field of metallography. They also state that certain additions and rearrangements of the subject matter were made. The preface to the third edition in 1927, which at this time is being published serially by IRON TRADE REVIEW, was written by Profs. Berndt and von Schwarz. In this edition the additions and rearrangements were carried further.

Chap. I—Polishing and Etching of Samples

THE technical iron used in practice is not a uniform material, but consists of a number of constituents. The examination of its structure can very often be carried out with the naked eye, or with the use of a small hand lens; to recognize its microstructure, on the other hand, large magnifications must be employed. The examination at low magnifications in contradistinction to the *microscopic* testing is designated as *macroscopic.* While the surface for microscopic examination must be very carefully prepared, simple filing and a slight polishing ordinarily suffices for the surfaces to be examined macroscopically. This requires little time. Naturally, the more perfectly the surface has been prepared, the better developed will be the structure of the sample after etching.

If a piece of metal is to be investigated, one must above all be certain as to how it was produced or how it could have been produced. It is just as important to determine in what manner the piece was used and of what type the possible stresses were. It is often also of interest to determine, if and how the part failed in operation, so that special consideration be given to these points in the investigation. Selection of the sample must also take cognizance of this, for the preparation of the metallographic section in conjunction with a chemical analysis gives what must be learned about the nature of the material. As we will see later, the macroscopic investigation shows in the simplest manner the nonuniformity of the material and is thereby able to indicate, at what places the samples should be analyzed chemically in order to be able to verify quantitatively impurities and segregations in materials.

The corresponding choice of the direction of the section is based upon receiving the desired information on the material under investigation positively and in the simplest manner. In most cases it will suffice to take one cross section and one or more longitudinal sections, insofar as a simply constituted material is under consideration, for example, one which was rolled, drawn or forged. With castings it depends wholly on their shape and also upon the object for which the metallographic investigation is to be carried out. If a material which has been cooled from the molten state or a melt which has solidified in a crucible, is to be investigated, one would choose the section, so that he receives information on all possible zones, as here in addition to the segregations and the pipe, the separation of the constituents according to specific gravity is also important.

Thickness Is Important

If the material can be cut with a saw, the sample is cut off with this tool, but care should be taken not to make the specimen too thick. Specimens about ½-inch thick are the most suitable. Care must be taken also that the sample does not heat up in cutting. The same applies to the grinding which follows, in which the pieces, which are only permitted to become slightly warm to the hand, must often be cooled in water. Pieces can be cut from very hard materials with a diamond saw; a thin grinding disk, carborundum disks with rubber binder are often advantageous; or an old cold saw on the blade of which a paste of carborundum powder and oil is continually fed can be used. With very hard and therefore brittle materials pieces can often be knocked off with a hand hammer, especially if a nick has been made. The eyes should be protected against chips which may fly off, in addition, care should be taken to prevent damage by the pieces knocked off through the use of rags and boards. Extremely hard materials naturally cannot be filed but must be ground; the fine polishing is then carried out as with the softer materials on emery paper.

The preparation of polished surfaces of iron and steel samples is carried out as follows: The samples are first filed or planed as smooth as possible, then they may be finished with a flat file and finally with emery paper of finer and finer grain. It suffices to begin with No. 1 and 2 and then to use Nos. 0 and 000. The grinding with each finer size is always carried out at right angles, or in a somewhat changed position in the case of an elongated and thereby narrow ground surface, to the previous, until the scratches due to this can no longer be seen. This is necessary as otherwise the recognition of the microstructure is made more difficult by the scratches and these may also lead to erroneous conclusions in the interpretation of the section. The grinding also can be carried out with emery paper pasted on wood or metal disks.

After some practice, one can polish very rapidly on ordinary emery or carborundum papers which are simply laid on an iron surface plate. Two emery papers laid on top of one another should never be used for polishing, as the corners and edges of the sections will be attacked more and the surface will never be level. The better and the finer the emery paper on which the surface is worked, the better the structure will develop on etching. Carborundum papers are of considerable advantage with the very hard alloys.

After polishing it is often the case that little or nothing can be seen, the surface appears wholly uniform. The structure is developed by etching, that is by treating it with suitable chemicals which attack and respectively color the individual constituents differently, so that they can be distinguished from one another due to the difference in their reflection properties or color. The best etching reagent for macroscope investigations and especially to indicate segregation in low-carbon steel is that suggested by Heyn, the copper-ammonium-chloride solution which can be kept for a long time. This solution con-

sists of 1 part copper ammonium chloride in 12 parts of water. Etching is carried out as follows: One fills with the solution a porcelain dish—a porcelain mortar is very suitable—the size of which depends upon the size of the specimen, and places the piece coming direct from the last grinding on the emery paper and without touching the surface with the fingers in the dish with the ground surface up. The container should be filled so that the piece is covered with sufficient solution. To prevent the separation of the solution on the polished surface and to prevent poor action of the etching medium, the container is moved back and forth while the etching is being carried out. Immediately after the sample has been placed in the copper-ammonium-chloride solution, a copper precipitate is formed on the polished surface, a result of the surface displacing the copper in the solution.

Method for Cleaning

If in spite of this the surface is touched or otherwise shows traces of grease, it can be cleaned with a lime emulsion and a blotting paper pad. This is preferable to washing with benzine.

The sample is left in the solution exactly 60 seconds, after which it is taken out and immediately held in flowing water under a faucet, and the copper precipitate is removed by rubbing vigorously with a moist cotton pad. If the copper precipitate clings tightly, it is not advisable to rub it off, because in doing so the surface may be easily scratched. In that case, the sample is laid for a time in an ammonical copper-ammonium-chloride solution, which dissolves the copper. This solution is prepared by adding salammoniac to the ordinary copper-ammonium-chloride solution until the precipitate first formed is again dissolved. With alloy steel and also high-carbon steel very distinct surfaces for macroscopic observation are obtained with 4 per cent alcoholic-nitric acid.

If large unwieldy pieces, for example cross sections of large beams, etc., are to be handled, for which a sufficiently large container is not available, and for which too much etching solution would be necessary, the surface is daubed with the etching solution by means of a cotton pad which is saturated with copper-ammonium-chloride solution for about 1 to 1½ minutes and the copper precipitate so formed is removed in the manner previously described. If one desires to etch only in certain spots, these spots are surrounded with a ridge of modeling clay and in this manner the container of the desired size is constructed. Also cutting up the section before grinding often is advisable, because thereby the work can be made easier.

After the complete removal of the copper precipitate the sample is again thoroughly washed in water, after which it is completely dried with a soft linen rag or towel, and then swabbed with a cotton pad saturated with alcohol to remove the last traces of the etching solution and to protect the piece from rust later on. After this, the sample is once more carefully dried, the microstructure of the polished surface developed by the etching will last for years if the samples are preserved in dry closed containers although it is even better if they are preserved in a desicator containing calcium chloride and soda lime or in air tight containers partly filled with these chemicals.

The copper-ammonium-chloride darkens the areas containing phosphorus in high content a bronze shade. This method of etching gives good results only for iron alloys having a carbon content up to about 0.3 per cent, but may be used, up to a content of 0.7 per cent. With higher carbon content, however, the copper precipitate can no longer be removed so that the structure can be recognized. To bring out the segregations in these cases, it is necessary to use an etching solution originated by Oberhoffer and consisting of a solution of 1 gram of copper chloride, ½ gram of zinc chloride, 30 grams of iron chloride and 50 cubic centimeters of concentrated hydrochloric acid in a mixture of ½ liter of water and alcohol. This solution is suitable for steel up to 0.9 per cent carbon. In comparison with the copper-ammonium-chloride solution, this colors the areas containing phosphorus less, so that they appear light with vertical illumination. With oblique illumination they appear dark.[1]

While these two methods are especially suitable to study the distribution of phosphorus in iron and steel, one can determine the sulphur segregation by the simple method of R. Baumann, known as the "sulphur print test."

How Test Is Made

This test consists of immersing a piece of silver bromide paper for about 30 seconds in 5 to 10 per cent sulphuric acid, draining it and then pressing it on the surface of the metal for about a minute; thereafter it is fixed in the regular way, washed and dried. The areas high in sulphur are indicated by a brown coloring, while the high phosphorus areas are thereby only colored yellow. For the rapid testing for uniformity of structure of material received into stock, the Baumann sulphur print test is very suitable, as it can be carried conveniently out on smooth or slightly filed rod ends. One receives a sort of natural print which even with worked material permits a control. By the attack of the sulphuric acid the surface is almost freed of sulphides. The second sulphur print is therefore much weaker in color and shows only areas very high in sulphur. If two sulphur prints are desired, the section must be ground on emery paper again before the second print. The same holds true if the section is later to be etched either macroscopically or microscopically.

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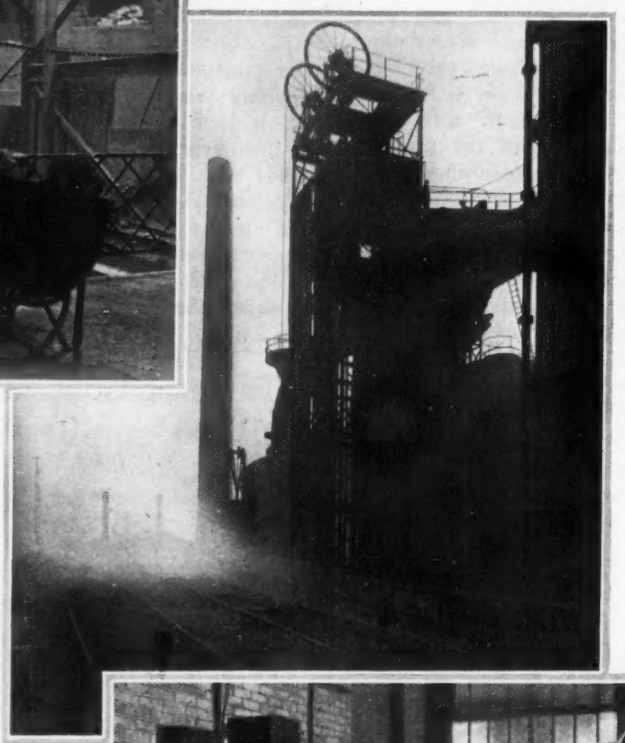
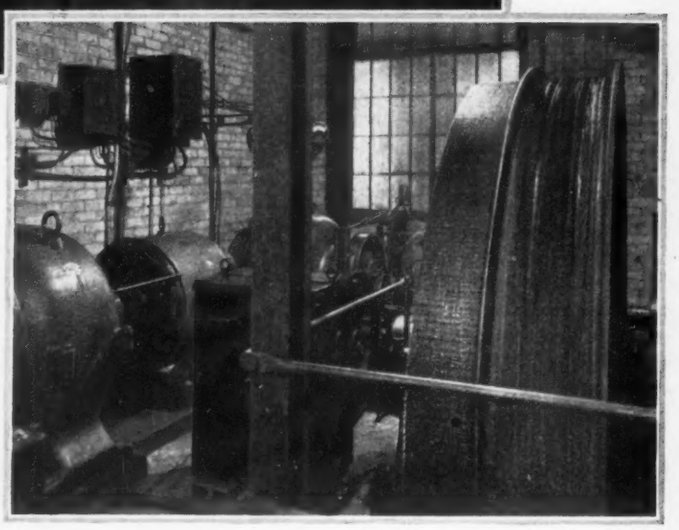
Officers elected at a recent meeting of the Rochester chapter of the American Society for Steel Treating, were as follows: Chairman, C. F. Wattel, metallurgist, Northeast Electric Co., Rochester, N. Y.; vice chairman, E. S. Roscoe mechanical engineer, High Speed Hammer Co., Rochester, N. Y.; and secretary-treasurer, I. C. Mathews, research laboratory, Eastman Kodak Co., Rochester, N. Y.

[1]Of the rest of the constituents of iron, manganese when present in large quantities and silicon can be checked by this etching solution. Whereby manganese is colored similarly to phosphorus, silicon on the other hand acts just the opposite. A. Fry, *Stahl und Eisen*, Vol. 40, 1910, Page 662.





(Left)—The left-hand cage loaded with coke. (Center)—A view of the electrically-driven hoist. (Bottom)—Interior of the motor room

INSTALL Electrically Driven Hoist *on* British Stack

PLANT extensions and improvements are still in progress at British steelworks in spite of the somewhat parlous condition of the trade. Bolckow Vaughan & Co. Ltd., Middlesbrough recently installed an electrically-operated blast furnace hoist which was built at the Witton, Birmingham, works of the General Electric Co. Ltd. Bolckow Vaughan & Co. Ltd., is one of the largest of British iron and steel syndicates capitalized at £6,000,000 with about a dozen works allied and controlled by the company. The holdings include 19 blast furnaces, 15 open-hearth furnaces, one slabbing and four plate, rail and section mills, the capacity being 15,000 tons of pig iron weekly and 8000 tons of steel.

In general the essential features of the electrically driven hoist of this type are ease of contdl, rapid and smooth acceleration, rapid travel, and even retardation. The method of operation adopted is such that an unskilled laborer can be instructed in a few minutes. A lever is pushed in one direction to hoist one cage, and in the opposite direction to hoist the other. The stopping of a cage is entirely automatic, so that once a hoist on one cage has been started, the operator has nothing to do until it is required to send up the other cage. Decking is to within 1/16-inch, no matter what load is being taken up; this allows easy and quick loading. The total lift is 100 feet, the time required for a single hoist being 15 seconds.

Drum Geared to Motor

The motor room is situated immediately adjacent to the hoist. The hoist drum is driven through reduction gearing. The main winding motor is a 100 horsepower, 460 volt shunt wound Witton-type machine, controlled on the Ward Leonard system, and the 72-kilowatt motor-generator set. The control of the main winding motor is based primarily on the Ward Leonard arrangement, and a main controller, which is driven through gearing by the main motor, and an operator's controller. There are, in addition to the foregoing, an automatic main switch, decking relay, and an emergency switch; and, the usual ironclad circuit breaker for controlling the incoming stator current to the alternating-current motor and starting resistance in the rotor circuit.

The operator's controller has two operating positions. It usually is placed in the motor room, and coupled by a rod to the lever which is fixed at the bottom of the hoist. If the lefthand cage is ready with its load to be hoisted, the operator pushes this lever as far as it will go to the right. The main controller is geared

(Concluded on Page 1548)

Uniform Cost Accounting Is Key To Many Business Problems

By Dr. Arthur E. Swanson

MASTER the knowledge of finding costs yourself. Know costs, and attack costs. Many concerns are constantly given setbacks in their work of developing and carrying on scientific cost accounting in their businesses by competitors in the same field who do not apply cost finding methods. Thus many cost finding plans are disregarded after they are well along the road in successful management because competitors disregarding costs cut prices below the cost and profit ratio. The solution of this difficulty is to propagandize cost finding, urge it and teach it. Don't let the economic wrongs of others entirely obscure your vision.

No matter how good the physical layout of your plant may be, or how valuable and efficient your machinery, management and working forces have been developed, if you don't know your costs you are not successful in your business.

Of course, it must be borne in mind that cost knowledge, essential business asset that it is, must be tied up with intelligent management, good working forces, proper equipment and physical properties or it becomes a toy.

After all, no business or industrial enterprise is a success if it has not made profits at the end of the year. We are in business for profit first and last. Profits must be made so that the business can expand and so that the personnel of an organization may advance. The volume of business must increase steadily. You may talk of being in business for service, but service after all is only a means to an end. The real objective is profits. We have seen business organizations fail because of rendering too much service, and others go under because they gave too little service. To obtain profits, costs must be studied.

Cost knowledge is of the most vital importance in setting prices of products. Fixing of prices is one-half cost and one-half demand. The best tool of diagnosis in business is costs.

To increase plant efficiency you must know costs. When you study costs analyze specific items so that you can attack them. Attack all your costs after you have analyzed them. You may be accustomed to a 5 per cent loss perhaps in the purchase of your scrap material. You take this as a matter of course, but if you stop to analyze this item further you probably will find that this loss may be reduced to 2 per cent. If you succeed in reducing this cost 3 per cent, you never again will be happy until you can keep your scrap-purchasing costs reduced to that extent.

It is by no means simple to find costs. The difficulties challenge the wits of the best in business. That is one of the reasons why many concerns do not grasp the significance of costs.

Another reason for lack of interest in cost finding is the fact that many enterprises have been started in a small way by craftsmen or mechanics who were interested primarily in making the product. Thus original costs were simple, being largely direct labor costs, and as the concern progressed it continued to get along well without exact cost knowledge. Costs do not trouble the heads of some concerns who have passed into a sphere of indifference as regards their costs of operation.

Unfortunate experiences in cost finding, perhaps due to a poor system that was tried out is another reason for indifference in setting up cost systems. Don't fight a straw man in such a case but learn good cost systems.

Don't let the cost of getting costs discourage you. The method is worth the expense. Unless a concern is so impoverished as to be in virtual bankruptcy, it can devise some sane method of cost finding. This disregard of costs by competitors, of course, is demoralizing. Then it is up to the leaders in any industrial group to propagandize cost finding, to educate others in the need for cost finding methods, to create a demand for cost finding, to develop appreciation of cost finding.

Make you cost finding classifications as uniform as possible, but not until you first have cultivated an appreciation of cost finding among your competitors. Uniformity in cost methods helps make all groups the same cost language.

Executives should master and know costs of their operations at first hand, rather than to delegate this work to someone else. It means study, but it must be done.

As a business progresses the prime costs should dwindle and the cost burden increase. As the burden grows in relation to the prime costs, so the business progresses, and a plant that is able to turn out a product with automatic machinery finds its prime costs steadily reduced, although the capital costs may be many times as heavy as when the business was less successful.

An able executive of any buiness must be a teacher, an educator. Seldom is a business man a failure as an executive if he has the qualities of an able instructor. More and more the business executive must learn to instruct and educate.

Three Stages of Cost Development Work

DEVELOPMENT of group cost work divides itself naturally into three stages: First, propaganda, which is the dissemination of information showing what it means to know costs. Many members of the group do not know costs and do not realize what their costs can do for them.

The second stage is education in different methods, and needs to show what a cost system should do for each need. A plan for each one is essential.

The third stage is the adoption of a system allowing for comparisons between plants. One of the main values of a system is lost if comparisons cannot be made.

The first step may take months or years, while the second should require only months, and the third is a matter of weeks only. The result is uniform classification, and uniform accounting. This makes possible comparison of items of cost like depreciation, obsolescence and normal working time, which are matters of judgment, and may make a vast difference in apparent costs, with differing policies.

The author is a member of Swanson & Ogilvie, Chicago, consulting engineers. Abstracted from an address before the Screw Machine Products association, Chicago, May 17.

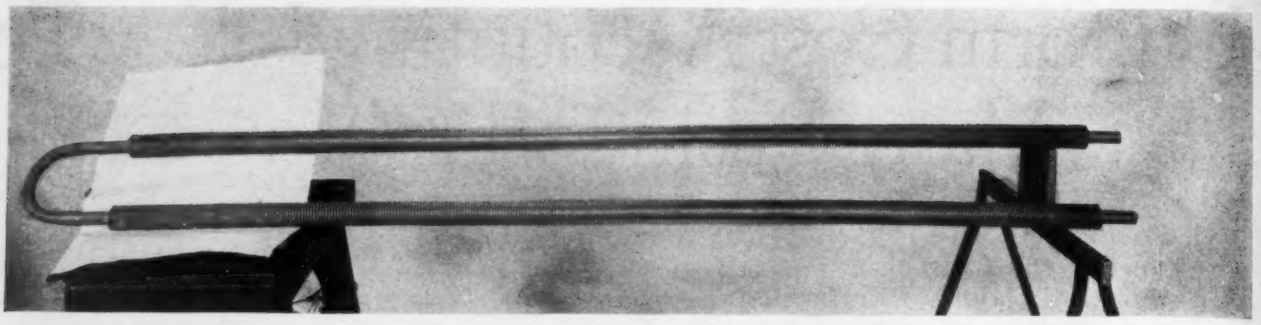


Fig. 1—A tube for heat transfer apparatus. The fin to provide an extended surface was copper brazed in an electric furnace

Steel Parts Brazed in Electric Furnace, in Atmosphere of Gas

BY THE use of atmospheres of protective gas in electric furnaces, steel parts used in the manufacture of complicated assemblies can now be conveniently united by a strong alloy weld which would be exceedingly difficult to accomplish by other means, according to an announcement by the General Electric Co., Schenectady, N. Y. This method, known as hydrogen brazing, involves the welding together of the parts to be joined by means of a copper flux.

This process of copper brazing, while not new, has heretofore been attended by a number of practical difficulties in application. Marked improvements in the equipment used are now announced by the General Electric company, in whose laboratories considerable development work has been going on for a number of years. As a result, the method may now be applied successfully to many operations with resulting simplification of method and reduction of overall costs.

Electric furnaces of small size, utilizing protective atmospheres, have been used in laboratories for brazing by this method for some years. An early and important use was the manufacture of steel shafts for golf clubs. The advantages of the process were quickly recognized, and a gradual development of suitable equipment followed.

The theory of the process involves the reducing action of a hydrogenated atmosphere, which thoroughly cleans the surfaces to be joined, and the capillary attraction of the fluid copper, causing it to diffuse joints between the parts. The protective atmosphere is essential during the cooling portion of the cycle also, and for this reason the usual type of furnace cannot be used.

A typical hydrogen brazing furnace used in the Schenectady plant of the General Electric Co. consists of three "stages," as shown in Fig. 2. Each stage is in the form of a platform. Covers which may be raised and lowered are provided for two of the stages. The work to be brazed is first assembled on one stage, copper wire or chips being placed adjacent to the joints to be united. The assembly is then placed in the heating chamber at a suitable temperature, and the next stage is loaded. When the first assembly has been suitably heated over a predetermined period of time, it is withdrawn from the heating chamber and placed in a cooling chamber, the second assembly automatically moving into the heating chamber. Thus the heating, cooling and assembly may take place at the same time.

Steel Is Bright Annealed

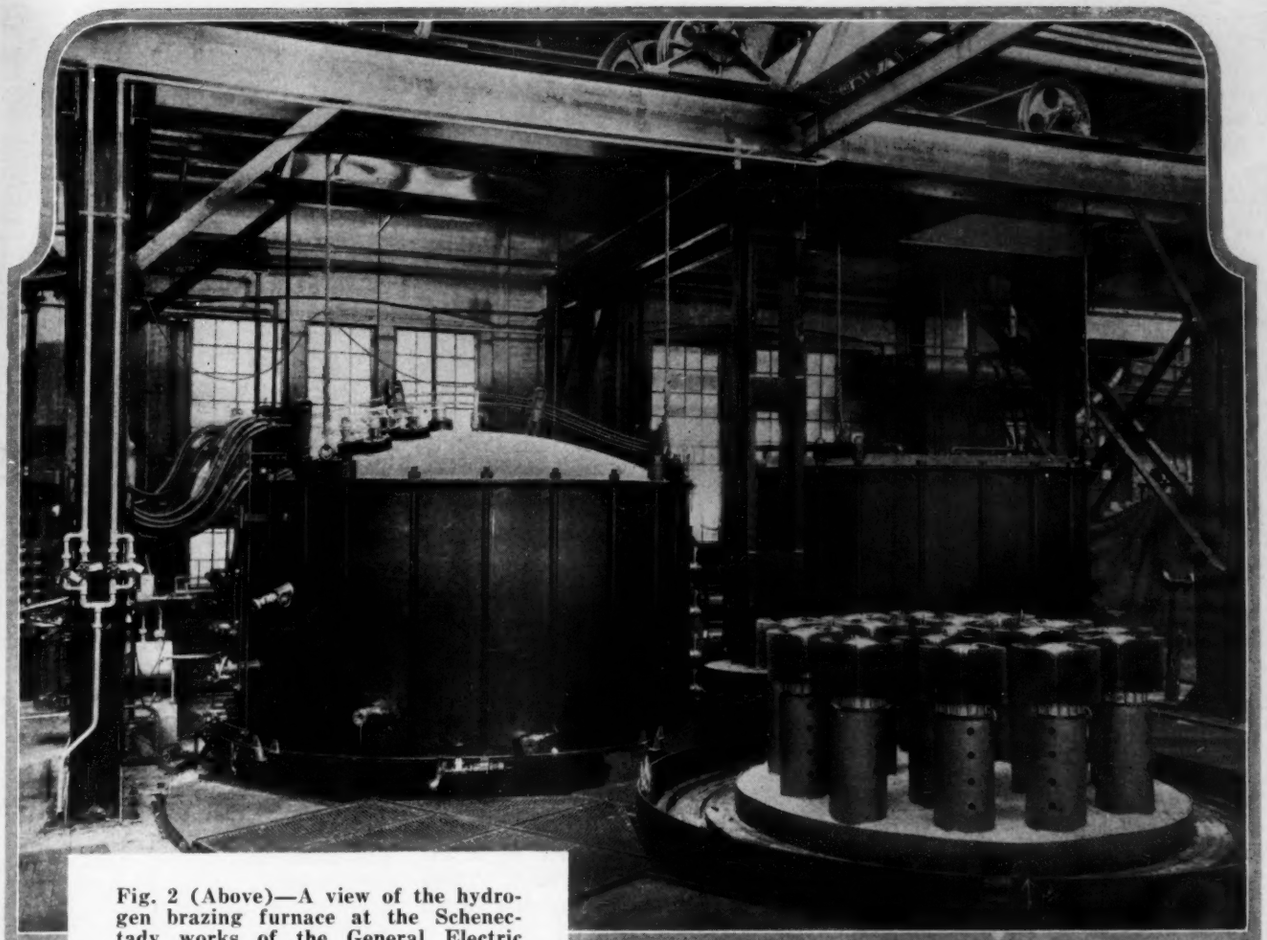
Another application on which the protective gas envelope is used to advantage is bright annealing steel in sheet or fabricated form, for nickel, monel and certain other nonferrous metals, to save the cost of annealing pots, handling, pickling, etc. In such work, a furnace of the continuous type, shown in Fig. 3 is used, designed for larger output. The work is loaded on suitable trays arranged to be pushed through the furnace on a roller track. An elevator raises the trays into the furnace at the entrance end and a similar elevator is used to remove them from the discharge end. A hydraulic cylinder is used to push the work through the furnace. Heating takes place in only one portion of the furnace, the remainder being provided with a water jacket for cooling; thus the work is both heated and cooled in the protective gas atmosphere.

Inviting Many To Speak at Coal Meeting

Some 60 or 70 scientists and fuel technologists in 11 different countries have tentatively accepted invitations to speak at the second international conference on bituminous coal which will be held at Carnegie Institute of Technology, Pittsburgh, during the week of Nov. 19. The list includes about 40 Europeans whom Dr. Thomas S. Baker, president of the institute, invited personally while making a two-month visit abroad recently in the interests of the conference.

The purpose of the congress is similar to the one held in 1926 by the school, namely, to present the results of recent studies of coal that have to do with improved methods of utilization and combustion. The program will include the discussion of low temperature distillation, high-temperature distillation, coal tar products, power, smokeless fuel, complete gasification of coal, hydrogenation, pulverized fuel and its new applications, fixation of nitrogen, coal beneficiation, etc.

E. J. Byerlein, general manager, Milwaukee Foundry Equipment Co., Milwaukee, addressed a meeting of the representatives of the malleable castings industry of the Milwaukee district recently. He spoke on the increasing foundry tonnage and new uses for castings.



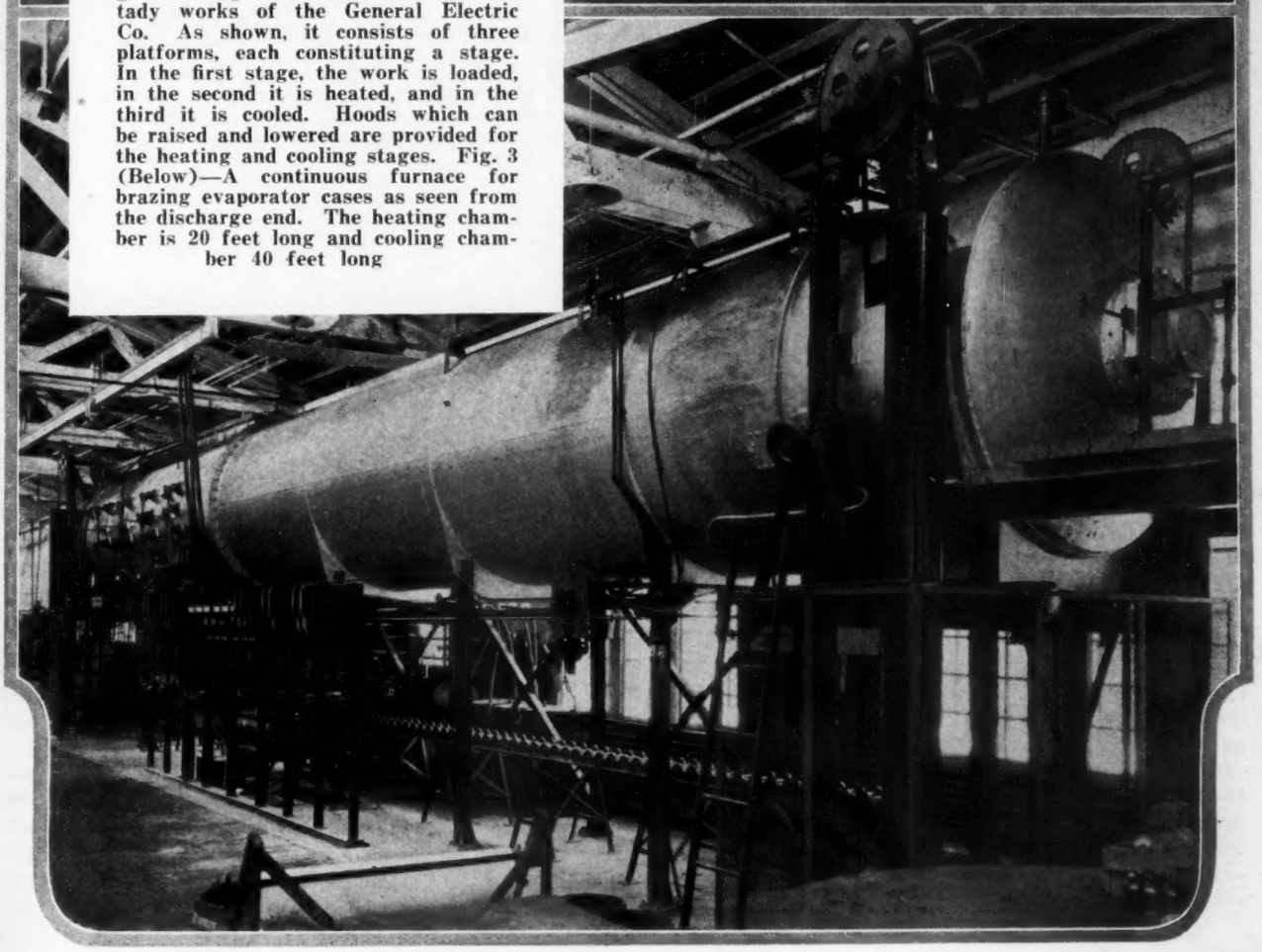
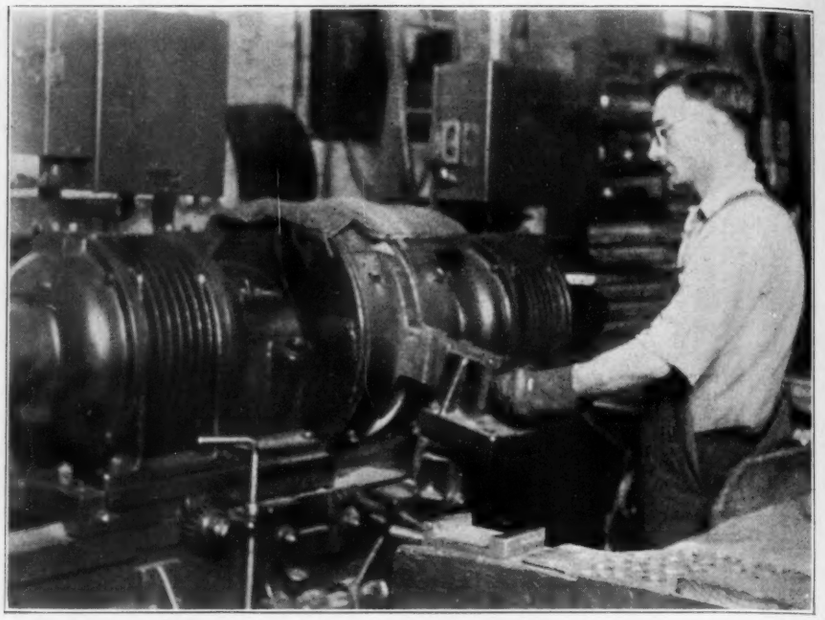


Fig. 2 (Above)—A view of the hydrogen brazing furnace at the Schenectady works of the General Electric Co. As shown, it consists of three platforms, each constituting a stage. In the first stage, the work is loaded, in the second it is heated, and in the third it is cooled. Hoods which can be raised and lowered are provided for the heating and cooling stages. Fig. 3 (Below)—A continuous furnace for brazing evaporator cases as seen from the discharge end. The heating chamber is 20 feet long and cooling chamber 40 feet long

MAKING SPRINGS on a QUANTITY BASIS



Ends of coil springs are ground flat between abrasive disks

SPRINGS are among the earliest mechanical appliances used by men, their origin dating to a period before the Christian era when the catapult was invented by the Assyrians to hurl huge boulders at their enemies in both offensive and defensive warfare. This engine of primitive warfare made use of the spring principle by utilizing the elasticity of large wooden planks.

Another effectual weapon of early warfare that utilized the spring for motive power was the crossbow of the middle ages. This appliance made its appearance in the eleventh century and remained in continuous use for over 500 years. Crossbow springs were made of both wood and steel. At close range, this weapon was deadly as it enabled an opponent to drive a dart through the body of an antagonist 100 yards or more away.

Today, the use of springs is confined principally to peaceful purposes, aside from a few instances such as the recoil springs used on some types of ordnance. In present-day practice, the elasticity of metal is made use of in three general types of springs, torsion springs, extension springs and compression springs. All three types can be made in several forms.

An example of a coiled tension spring is found in the little springs used on eye glasses to keep the guards in contact with the wearer's nose. In this case the spring is in the form of a coil. Extension springs are also made of coiled wire. A good example of this type of spring is that employed in keeping cam levers in contact with the cams in many types of machines. A good example of a compression spring is found in the coiled springs used on the valves of automobile, aircraft and other types of internal combustion engines. In this case, the spring is always under compression and functions as it expands, thus closing the valve. There are, of course, many varieties of all types of springs.

Modern spring making is a form of wire working that calls for considerable skill in design and manufacturing, if accurate results are to be secured. At one time all springs were calculated by rule-of-thumb methods. Now, however, the engineer carefully calculates the work required of the spring and ascertains the weight it must support under a given expansion or compression.

Numerous Metals Are Used

Coil springs are made from many kinds of wire. Probably 99 per cent of all springs are made of steel, while the remaining 1 per cent is divided between brass, phosphor bronze and German silver. Brass and phosphor bronze are excellent materials for springs which are exposed to moisture. Phosphor bronze is much tougher than brass and resists crystallization to a greater degree.

Brass and bronze springs are more expensive than those made of steel. This is due to the higher cost of material and to the fact that the permissible stress is less, which makes it necessary to use a larger size of material to obtain a given stiffness. Brass weighs 9 per cent more than steel while phosphor bronze weighs 11 per cent more, these factors adding to the comparatively high cost of these springs.

Music wire is extensively used in making springs as it is tough and uniform. It is generally used in making small springs for electrical and mechanical devices, such as sewing machines, where the spring is expanded and contracted constantly during the operation of the machine.

Vanadium steel is also extensively used in spring making. A small percentage of this material is added to steel to increase its toughness and elasticity. Tests on springs made of this material yield good results. Springs made of this material are comparatively expensive, owing to the higher cost of the alloy. The material most extensively used in spring making, however, is a grade of steel called spring steel which contains the requisite amount of carbon to temper evenly in the heat-treating operation.

The American Spring & Mfg. Corp., Holly, Mich., makes a great variety of springs for all purposes in sizes ranging from the smallest wire up to that of ⅜-inch diameter. Flat springs, wire forms and metal stampings also are produced. The coil springs are used in automobile construction, fountain pens, pencils, electrical equipment and in various lines of hardware. In fact the field is broad and almost unlimited. Springs are produced which require 35,000 to make a pound, while the largest ones weigh five pounds each. A small spring used in fountain pens is 11/32-inch long and 0.042-inch in diameter, comprising 20 coils of 0.006-inch wire. A pound of this wire will wind 700,000 coils.

Many years ago coil springs were

wound over arbors, but this slow and expensive process has been superceded by the automatic spring coiling machine which feeds the wire and forces it through dies which impart the necessary curvature and lead. Such machines make both closed and open springs which may be straight, tapered, or barrel shape. After a certain amount of wire has been coiled by the dies, the spring is cut off automatically.

Various types of springs require further treatment. In some instances it is necessary to form the ends into eyes or other shapes. Such operations are performed with special dies. All springs are tested under pressure or by extension to make sure that they will fall within predetermined specifications. In some instances heat treatment is necessary and further many springs are finished by japanning. Large quantities are placed in wire baskets and dipped into japanning vats, after which they are baked. A few springs for specific purposes are nickel plated.

In finishing an almost endless variety of open coil springs it is necessary to form the ends flat and true. This is an abrasive operation which until recent years was performed in a variety of ways, principally by holding the springs one at a time against the face of a grinding wheel. As may be imagined, the operation was slow and expensive and it has been superseded at the plant of the American Spring Co. by double-disk automatic grinding machines, a battery of several being operated. These machines are electrically driven, a separate motor of 7½-horsepower being provided for each disk spindle. The disks are thick abrasive circles, 20 inches in diameter, 30 or 36 grit.

Springs Ground to Length

In the operation of these machines, the work is located in a special holder which is provided with a large number of holes in which the springs are inserted. Then the holder with its load of springs is placed between the grinding disks which are brought together to make grinding contact. Compression springs make their own grinding contact to a certain extent as they open as the ends are ground flat. The distance between the disks is controlled by an accurate micrometer adjustment so that by the time the spring has stretched its maximum amount the length comes within predetermined limits. Each operator is provided with two holders so that he can load one while another load is in process of grinding. Thus the operation is practically a continuous one. The double disk grinder has been a boon to the spring manufacturer as it has been the means of reducing grinding costs several hundred per cent.

Foundry Book Issued

The Pittsburgh Foundrymen's association recently published a booklet entitled "The Call of The Foundry," containing information upon the part played by the foundry industry in the production of manufactured products in Pittsburgh with the idea of interesting boys in the apprenticeship courses offered in the district. The booklet also contains information on the course in foundry practice conducted by the Pittsburgh public schools, as well as information on the qualifications necessary for this training work. The booklet is well illustrated.

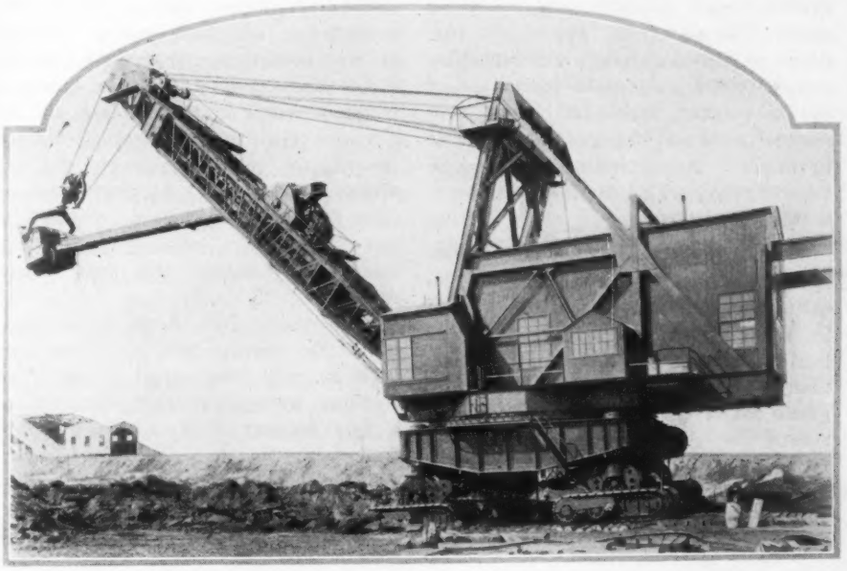
Crocker-Wheeler Electric Mfg. Co. has moved its offices at Pittsburgh from 300 Penn avenue to 901 Clark building.

12 Cubic Yard Stripping Shovel Is Among the World's Largest

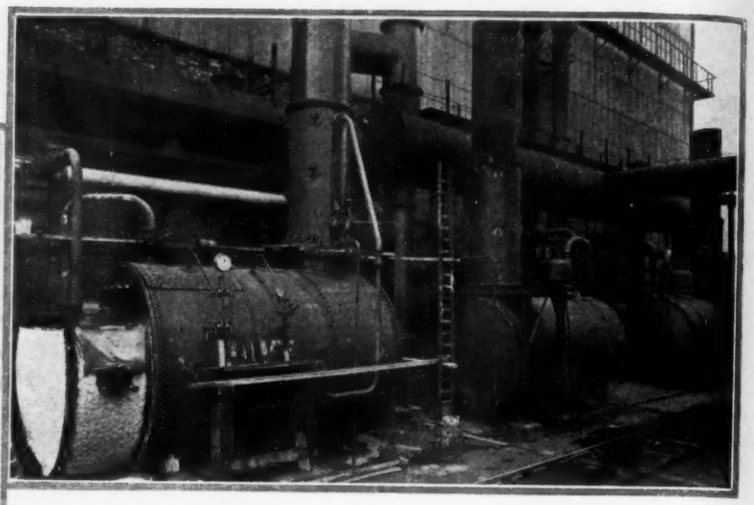
A NEW coal stripping operation formally opened on May 22 by the Northern Illinois Coal Corp. near Wilmington, Ill., is unique in that it is an entirely new project, laid out in a most scientific manner and completely equipped with the most modern and efficient machinery obtainable. Some 1500 invited guests were present on that occasion. Three electric excavators are used, including a dragline, a stripping shovel and a coal loading shovel, all built by the Marion Steam Shovel Co., Marion, O.

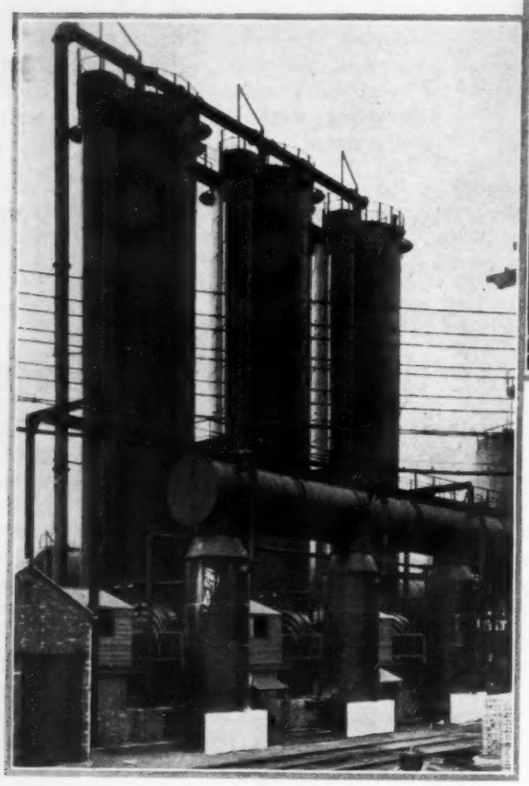
The coal loading shovel, shown in the accompanying illustration, is said to be one of the largest of this type ever built. It carries a 12 cubic yard dipper and a 90-foot boom and a 60-foot dipper handle. It is mounted on crawling traction trucks and is operated electrically from the power lines of the public utility company serving that territory. A 750-horsepower motor drives the motor-generator set for furnishing power to the various motions. The working weight with ballast is approximately 850 tons. The shovel operates three 8-hour shifts each day, Sundays excepted, and since being placed in operation it has handled 15,481 cubic yards in a 24-hour period. It is expected that in a calendar year the shovel will handle from two to three million cubic yards of material.

Previous to the construction of this shovel, the largest coal stripping unit which the Marion company had built carried an 8 cubic yard dipper, a 90-foot dipper handle. This machine operated effectively and economically in overburden up to 40 feet in thickness where the vein of coal averaged 5 feet in depth. However, there is much strippable coal having an overburden not exceeding 40 feet in thickness, but where the coal ages about 3½ feet in thickness. It was to operate under the latter condition that the new shovel was developed, although as in the case of the Northern Illinois Coal Corp., its use may be extended to a thicker vein with a consequent decrease in production costs. The accompanying illustration gives some idea of its size.



Exhaust heat boilers are shown at the right. Below is the cleaning plant which includes scrubbing towers and Theissen-type wet washers





Employs Waste Gases for Generation of Power

By Joseph Horton

British Correspondent, Iron Trade Review

DRIVING mill machinery by power generated from blast furnace gas is rapidly extending among English iron and steel plants. One of the concerns which employs this fuel for power purposes is the Staveley Coal & Iron Co. Ltd., Chesterfield, Derbyshire. This company operates several steelworks, numerous collieries and seven blast furnaces with a weekly capacity of 5000 tons. The furnaces are all of the closed top type. No special arrangements are made to collect the gas beyond the provisions of a crude gas collecting main. The gas from four of the furnaces is passed through individual dry dust catchers. The coke ovens are of the by-product type, 100 being non-regenerative, and 70 regenerative. Two by-product plants both of the semi-direct type work in conjunction therewith.

The power department of the Staveley Coal & Iron Co. Ltd. has an annual output of about 54 million kilowatts with an average annual load factor of 60 per cent besides many heavy direct steam drives. The great majority of the energy represented by these figures is derived from exhaust steam, blast furnace gas or steam raised from low-grade fuel. The firm is co-operating with local authorities, other firms and collieries and with the Derbyshire & Nottinghamshire Power Co. so as to establish a co-ordinated system of supply throughout a large area.

From the blast furnace the gas first passes through two of the three scrubbing towers meeting in its upward course among wooden packing grids a downward current of water. Thence the gas proceeds through Theissen centrifugal washers made by the Cockerill Co., Belgium, of which there are three in parallel, as shown at the upper left.* Each washer is direct driven by a 500 horsepower induction motor running at 575 revolutions per minute. Large mains then convey the gas under a slight pressure to the boilers and to a header near the gas engine. Before passing to the inlet pipes of the engines the gas goes through two of three Theissen washers driven by 200 horsepower motors, which are intended to extract the last traces of dust.

No trouble has been experienced with the engines due to dirty gas or from any mechanical cause. The washers necessitate the provision of a fair amount of auxiliary plant to deal with the hot and dirty water they produce. Thus this water is first treated in a Dorr thickener which serves as a clarifier; the water passes to the center of a 90 foot diameter circular tank where it is distributed upon the surface of the contents. Around the edge of the tank is a launder over which the clear fluid flows; the dirt sinks to the bottom which is as little disturbed as possible and upon which a system of rakes and squeegees slowly rotates drawing the dirt continually but slowly toward the center, where there is an exit pipe connected to the suction of a small discharge pump. When the water emerges from the towers and washers it is hot having taken up much of the sensible heat of the gas; it is still warm after passing the clarifier. Hence, before it can be re-used it must be cooled and this is effected by sprays over a pond 67 x 240 feet. Water is pumped by a Worthington Simpson centrifugal pump driven at 575 revolutions per minute. The sprays are of the inverted type and are fed from pipes branching through valves from a 5-inch header; cleaning can be undertaken in sections by the use of these valves. The average calorific value of the gas is 100 B.t.u. per cubic foot at 68 degrees Fahr.

The layout of the distributing system comprises about 60 miles of

*The illustrations in this article are presented through the courtesy of the *Power Engineer*, London.

high tension cables and overhead lines. The majority of the feeders operate at 6600 volts 30 cycles, but some of the recent additions work at 22,000 volts 50 cycles. Generation is mainly undertaken at the Devonshire works of the company where there is plant aggregating 25,500 kilowatts.

At this works the main steam generating units are 5000 and 3000 kilowatt Metropolitan Vickers mixed-pressure turbo-alternators arranged longitudinally. These are served by a 30-ton Craven overhead crane. Low-pressure steam for the mixed and low-pressure turbines comprises mainly the exhaust of five large Galloway vertical blowing engines serving the blast furnaces. High-pressure steam at 160 pounds a square inch slightly superheated is derived from two batteries of Babcock & Wilcox boilers aggregating 20 units each set separately. None of these are normally coal-fired, although they are provided with grates; blast furnace and coke oven gas is used. Apparatus for using oil fuel in an emergency also is installed.

It has been found that the improvement in the thermal efficiency and the use of gas engines is large; they give more than double the output from a given quantity of gas obtainable from other types of engine. The company lately has completed the erection of a third gas engine of 7000 horsepower. The majority of switchgear is of Metropolitan Vickers manufacture, the ironclad switches beneath the gallery being remote electrically controlled. Each alternator and frequency changer is equipped with an excitation regulator and a set of Fuss automatic synchronizing gear has been provided for the gas engines, but is not now used. This board also controls the 50-cycle side of the frequency changer and the 6600 to 22,000-volt outdoor step-up transformers on that system.

The main alternators are standard flywheel type machines. They have separate excitation from three 110 kilowatt motor generators giving 220 volts direct current. The frequency changers run at 600 revolutions per minute, are synchronous machines on both sides and are provided with a stator rocking device. Separate exciters are fitted for both sides, and an induction-type pony motor with liquid rotor resistance is used for starting. All alternating-current machines as well as the turbo-alternators have been fitted with Metropolitan Vickers field suppression switch equipments. The gas engine house switchboard is linked with two further main distributing boards in the vicinity of the turbo-alternators and rotary convertor.

From each pair of gas engine cylinders a pipe conveys the exhaust gases at about 700 degrees Cent. to a waste-heat boiler. Two boilers give about 14,000 pound evaporation and 160 pound super-heated about 200 degrees Fahr. The final exhaust from these boilers is at a temperature of approximately 250 degrees Fahr. The steam is passed into the main steam range of the works and used for general purposes; taking an arbitary figure of 15 pounds of steam per horsepower-hour as used in reciprocators and exhaust steam turbines, there thus is made available an extra 930 horsepower beyond the gas engine output.

The pumping plant mostly comprises a number of relatively small motor-driven centrifugal pumps, although there is one steam turbine driven set and another about to be added. The pump house accomodates a dozen pumps, eight of which are coupled to a 60-pound ring main, supplying water for general purposes from a nearby river. A large Mather & Platt lime and soda softener provides 3,000,000 gallons a day for the boilers and similar uses.

Whose Steel Industry Is It?

(*Concluded from Page* 1533)

Only recently the sanitary field, long held by cast iron, was invaded by a plant planned to use sheet steel and to compete on a price basis with cast iron by using modern quantity production methods. Rust-resisting steel, after a long process of education of steel men, seems to have been accepted by them, welding is changing the relations between the different lines and continuous sheet production may well be expected to revolutionize that field. No man can call his market his own.

You think that the automobile industry is yours but what are you going to do about the increasing proportion of fabric instead of steel in the body? And how about aluminum and aluminum alloys in automobiles, and in airplanes? What are you doing to assure yourselves of a growing market in the growing airplane industry? If you want the steel furniture market or the steel house market, shelving or interior trim, you will have to do more than deign to accept them, you will have to fight for them.

The two weapons in winning new markets are research and education. Certain of your member companies have already demonstrated that these weapons can accomplish. Some of those companies which have developed new products and intelligently promoted their use will be found heading the list of profitmakers. But if the industry as a whole is going forth to conquer new markets should the burden be placed on two or three companies? Whose steel industry is it?

So far as research is concerned, the steel industry has been almost anybody's except its own. Practically every new development in the use of steel has come from the consuming industries. Compare the present attitude of your industry with that of the German wire makers, for instance. Their association has built an experimental plant, co-operatively owned by all the members. In this plant they will manufacture a wide range of wire products and every process will be studied and restudied. Experiments will be made continuously to improve quality and manufacturing methods, reduce costs, and develop scientific distribution methods. And the benefits will be for the use of the entire membership.

You have proved to yourselves that even the most elementary kind of co-operation may mean millions to the industry. The simplification in sheet steel alone is estimated to be saving the industry $2,400,000 a year. Nobody will buy steel simply because you make it. But consumers will buy competitive materials if they are educated. Your industry has already spent what seems to you like a considerable sum of money in co-operation advertising. It has shown results in real tonnage. But you may be disappointed; co-operative advertising is still new; every campaign has to learn from its mistakes.

To get the greatest value out of co-operative advertising, it must be welded into a sound program with research. The two cannot be separated. I do not mean only technical research but also economic research for the safeguarding and building up of old markets and the development of new ones.

This new co-operation as a weapon in the new competition extends to the other important phase of the new competition, the competition between the different factors in the industry. Just as your prosperity depends on that of the consuming industries so does it depend on the distribution machinery. Trying to beat the jobber is too much like knocking your head. Only a spirit of understanding and co-operation can make the steel industry one, in its war against other industries.

Installs Electric Hoist on Blast Furnace

(*Concluded from Page* 1540)

to the main motor and when the lever is pushed over the motor starts and accelerates. At the required moment, the main controller commences to decelerate the main motor. When the cage has reached the top of the hoist the decking switches, which are incorporated in the main controller, operate; and, apply the brake so that the hoist is brought to rest at the exact level of the upper staging. The operator performs no other operation other than the original pushing over of the lever.

Lever Controls Movement

The cage will now be at the top, and the cage which at the commencement of the operation was at the top will now occupy the right hand side ready for loading. When all is ready the lever previously mentioned is pushed back to the starting position in order to carry out the hoisting of the right hand cage. As various loads have to be handled which differ considerably in weight, that is, from taking up an empty cage to one filled with ironstone, some provision must be made to insure that the cage decks accurately under all conditions. For this purpose a decking relay is provided which adjusts the strength of the generator field to suit the requirements of the load in question. Thus when the decking switches operate the solenoid brake will always stop the cage at the correct level.

An emergency switch is provided which, when operated, causes the brakes to be applied immediately, and so brings the cages to rest. A heavy ironclad draw-out type oil circuit breaker controls the 440-volt, 60-cycle, 3-phase incoming supply to the motor of the motor-generator set. This motor is served by a protected-type liquid starter.

Revise Award Conditions of Welding Medal

The American Welding society has announced that no paper submitted during 1927 was of sufficient value to merit the award of the Samuel Wylie Miller, consequently the board of directors has revised the conditions under which the medal may be awarded. The medal was established early in 1927 by Samuel W. Miller, consulting engineer, Union Carbide & Carbon Research Laboratories Inc., New York, and a past president of the welding society. The revised conditions of award are as follows:

1. The medal may be awarded annually for any meritorious achievement which, in the judgment of the board of trustees, has contributed conspicuously to the advancement of the art of gas fusion welding and cutting or the art of electric arc fusion welding and cutting.

2. The award for any calendar year shall be announced and the medal, together with a suitable certificate, presented at an annual meeting or a fall meeting of the society as the board of trustees may elect.

The conditions governing the award have been made broad so that it can be granted for achievement of any character which has contributed conspicuously to the advancement of either of the two branches of the welding industry. Thus the award may be made for a meritorious paper or an invention or a notable application of welding which has advanced the art either on the account of unique technical features or important economic advantages. The award may be made even for exceptional service of a nontechnical nature.

Studies High-Sulphur Ore

Results of experiments with high-sulphur iron made by Prof. C. H. McCaffery, University of Wisconsin, are of particular significance to Wisconsin. Iron ore from Florence county, Wis. contains about four times the percentage of sulphur found in commercial ore. Prof. McCaffery and his associates in working on the properties of blast furnace slags have found that selecting coke and limestone in proper quantities most effective for sulphur elimination.

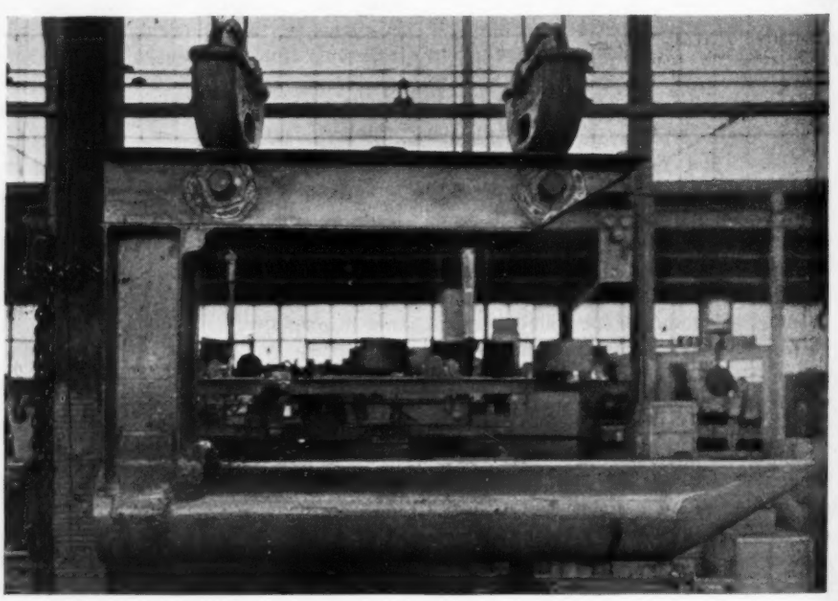
All officers were re-elected at the annual meeting of the Newark Foundrymen's association, Newark, N. J., June 6. J. L. Carter, Barlow Foundry Inc., Newark, is president; William Goldsmoth. C. A. Goldsmoth Co., Newark, is vice president; J. A. Williamson, Isbell-Porter Co., Newark, is treasurer.

Builds Hair-Pin Hook Carrier for Crane by Electric Welding

A HAIR-PIN hook carrier of novel design recently has been built by the Cleveland Crane & Engineering Co., Wickliffe, O. This carrier, which is shown above, is used in steel mills for conveying coils of wire, rod and strip. The entire operation of picking up coils from the floor, transporting them to destination and placing them in storage piles, or on cars, is accomplished by a single operator who is located in the carrier cab.

An interesting feature of this device is that it is constructed entirely of standard structural steel shapes joined by electric arc welding. The upper member is built up of standard channels with cross braces of flat stock. The hook proper is a piece of pipe tapered to a point, the method of strapping this pipe to the vertical member being worthy of note as is also the fillet brace between the built-up structural members.

All welding on this carrier was done with equipment furnished by the Lincoln Electric Co., Cleveland.



Editorials

Announcing a New Series

FOR the benefit of the thousands of metalworking establishments which, because of the scope of their activities, are obliged to depend on inexpensive methods of examining iron, steel and nonferrous materials, IRON TRADE REVIEW has purchased from Julius Springer, Berlin, Germany, the rights in the English language of the book "Die Praktische Nutzanwendung der Prufung des Eisens Durch Atzverfahren und mit Hilfe des Mikroskopes" by Preuss-Berndt-von Schwarz. The text has been translated by Richard Rimbach, Pittsburgh, who was the translator of the "Practice and Theory of Rolling Steel" by W. Tafel, another German book offered to readers in English by IRON TRADE REVIEW about two years ago.

The preface and first chapter of the volume written originally by Dr. Preuss appears in this issue, and subsequent chapters will appear every second week. The work is recommended to the executives of all manufacturing plants where metallography is employed as a check against materials. While the greatest value of this series undoubtedly will be found in the use of metallography for simple and inexpensive tests of steel and other materials, technical experts who are advanced in the art of metallography also will find the text helpful. The book also explains the use of modern metallographic equipment.

It was the experience of Dr. Preuss that in Germany many engineers and others who were charged with the responsibility of investigating materials did not have a thorough appreciation of the value of some of the simple methods of macroscopic and microscopic examination. That condition still obtains to a large extent in the United States in spite of the rapid growth in the appreciation of the efficacy of laboratory control. For this reason we believe the English translation of this volume will fill an important need in American industry.

More Trained Sub-Executives

MORE efficiently trained men for executive positions in industry, men to occupy positions between the main executives and the workers, are becoming more numerous, to the great gain of the craft.

Officials of technical schools note an increase in students electing courses in mechanical and electrical engineering, and a sharp drop in the number following civil engineering and chemistry. This indicates fewer young men are attracted to the latter and more to the former lines of work. Mechanical and electrical engineering supply men to supervise production and equipment, the men who are on the firing line under the main executives, and from whose ranks the heads of companies are recruited. An increasing number of steel company heads have come recently from this source.

With the former relative scarcity of men to follow these lines, this trend among students is of much importance to industry in general. Similar changes in mass choice of young men have been noted in the past, as opportunity has opened in one or another line and become less attractive in those directions which previously had drawn the majority.

Is One-Price Policy Coming?

UNDER the arresting and appropriate title "Whose Steel Industry Is It?," O. H. Cheney, New York banker, discusses in this issue many of the factors responsible for the present uncomfortable plight of the steel producers. His address before the members of the National Association of Flat Rolled Steel Manufacturers, which is abstracted on page 1531, sparkles with truisms which hit at the very core of the problem of "profitless prosperity."

Note that Mr. Cheney not only criticizes the attitude of sellers of steel in regard to prices, but that he also attacks the complex and antiquated price structure which imposes inequalities on buyers. "The one-price policy," declares Mr. Cheney, "revolutionized the retail business—and it will revolutionize the steel industry."

This is a positive statement, but one which we believe should receive the thoughtful consideration of every executive in the metalworking industries. If adoption of the one-price policy for selling steel were put to ballot today, steelmakers undoubtedly would vote it down by an overwhelming majority. However, converts to the policy gradually are increasing in number, and not a few observers confidently expect the industry to adopt it eventually.

In the meantime the approach of the one-price policy is being hastened by dissatisfaction with the present system and by the growing realization that many of the industry's methods of do-

ing business are not in accord with the economic standards of today. Every new act of steelmakers which smacks of price discrimination to buyers adds more converts to the growing group of those who advocate "one price and a firm price."

Congress Neglects Unemployment

INDUSTRY generally can be grateful that congress granted it a modest reduction in the federal corporation tax and did not neutralize this boon by passing any of the many restrictive and regulatory bills that were offered in other directions. But there is one subject that should have received attention prior to adjournment, May 29, and that is unemployment.

One of the principal recommendations of the unemployment commission that was set up as a result of the depression of 1921 was that the federal government create the machinery for determining the volume of unemployment, and when a stated point was exceeded the construction of public works, held back for this very emergency, be released. Secretary Hoover was one of the principal sponsors of the plan, which appears endowed with irrefutable logic.

Everyone seems agreed that the idea is desirable and practicable, but it requires congressional action to align the machinery. The subject should be considered unfinished business when congress convenes next December.

Pig Iron's Course Is Reversed

FROM the strictly statistical standpoint the increase of three in the number of blast furnace stacks active at the close of May is scarcely noteworthy, but the reversal of the down trend which has characterized May since 1923 is. In 1927 May developed a net loss of 10 stacks; in 1926 the loss was 8; in 1925 it was 25 and in 1924 the now-incredible number of 47. June opened with more stacks active than at any time since June 30, 1927, taking the month ends as criterions.

This expectation of lessened furnace activity in May, usually the subsidence of the first quarter's maximum effort, is a postwar development. In the ten years beginning with 1919, May has registered four increases and six decreases in stacks in blast; this is precisely the reverse of the situation in the preceding decade. In the 11 years in which monthly steel ingot production figures have been compiled, May has developed six recessions.

The deduction to be drawn from May's performance in pig iron is that the midsummer dip is likely to be tempered considerably. It would be contrary to all experience to expect production to hold up during the season when business generally relaxes, but there is every indication that the strength of the first quarter is ebbing more slowly than in the past few years.

What Our Readers Are Thinking

Old Timer Sings Swan Song

To the Editor:

I HAVE been a subscriber to your magazine since 1914. However, for the next year or two I will not be in touch with the iron and steel business and I do not care to have the magazines piling up in my office for no useful purpose.

When I was actively operating in the iron and steel trade, I would not be without the valuable assistance of IRON TRADE REVIEW, but the advent of combinations and amalgamations has made it impossible for an individual operator to exist. Local mills in connection with those which ship from outside all work so closely that I cannot secure agencies that will make enough profit to pay office expenses, and as to importing steel, this has been most unprofitable. The European mills are grouped into two cartels. When buyers favorably consider foreign steel they can purchase from one or the other of these cartels and get the same terms as from large American units. Therefore, our source of supply for current items has been completely eliminated.

In the case of some commodities I find that if I take a buyer to one of the manufacturers, the latter will not give me a commission. In other words their policy is to sell to me or to my customer at the same price, the only difference being that I must pay cash. All of this seems to be highly desirable and is rapidly concentrating complete control of all the business in the hands of a few bankers and their associates in and about New York. Perhaps it may be the best thing for the industry and perhaps, if I chose, I could obtain a salaried position with one of these interests. No doubt the salary would be adequate and I would earn it, but at the same time I would sacrifice my individuality and I might not be diplomatic enough to retain the good will of my superiors, in which event I would be relegated to some unimportant post or eliminated by one means or another.

I am one of those peculiar fellows who still believes it is not the best for all of us to be ruled and directed by a small group of individuals or a board of directors in a far-off city, the members of which have descended from or are related to some family of wealth, and whose chief qualifications for the important post consist of being able to wear a dinner or riding coat correctly and mingle socially with the "proper" bankers. Feeling this way about it, I might not obey orders implicitly enough, so I must go it alone.

So after all these years in the iron and steel business I am now at the place where I must seek other fields of endeavor and while it may be poor strategy, I have decided to burn the bridges behind me and disconnect myself from all association with iron and steel and begin my business career again in the "Primer Class."

Manufacturer's Agent

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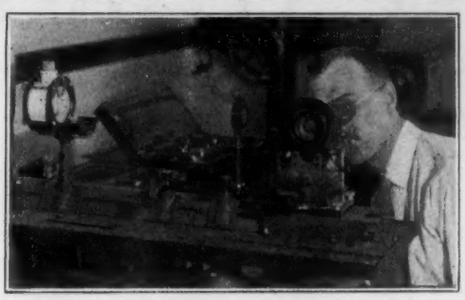

The A. B. C.'s of Microscopic Examination of Iron and Steel. Page 1537.

A LABORATORY is not essential for a simple examination of iron and steel, such as will serve needs of small metalworking establishments. Neither is long experience necessary for the purpose, not discounting the value of laboratory or experience. Convinced of this, several German metallographists prepared an elementary textbook for the man whose facilities are limited to the simplest equipment. IRON TRADE REVIEW has obtained the English-language rights to the book, and begins publication of it as a serial, on page 1537 of this issue.

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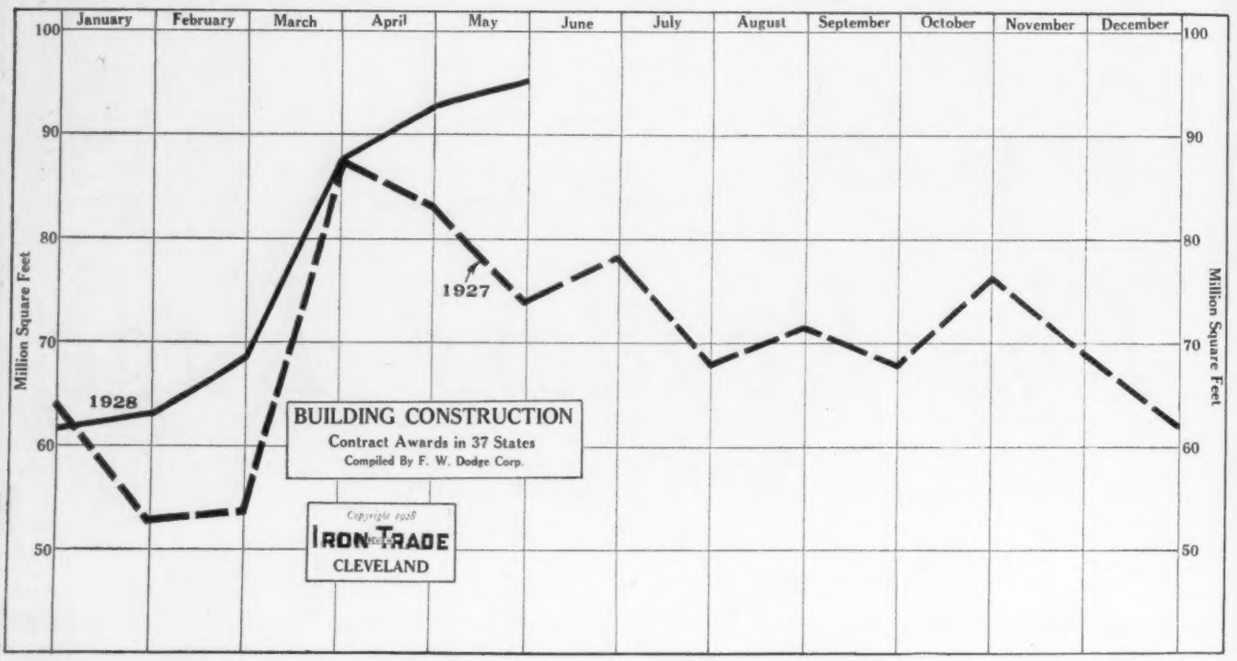
The Business Trend



Building Construction at Record

By JOHN W. HILL, Financial Editor

ANOTHER new high record for building construction was established in May. The total of building contract awards in 37 states, compiled by the F. W. Dodge Corp., was 95,256,300 square feet for the month. This compared with 94,480,500 square feet for April and with 74,079,100 square feet for May, 1927.

THE gain over April was small but it was significant, in that the month usually brings a decline from the peak of spring awards. In May, 1927, the volume of awards was 10 per cent below the preceding April, while in May, 1926, there was a decline of more than 2 per cent. Compared with the corresponding month of last year, the May total for 1928 shows a gain of fully 28 per cent.

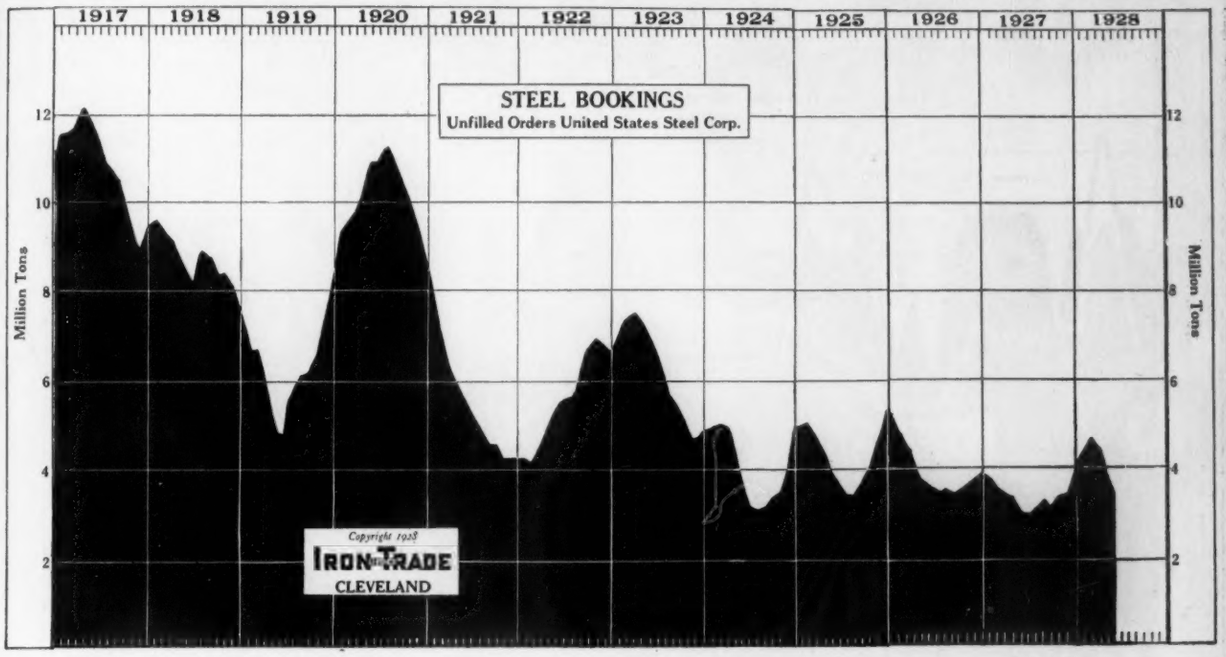
DURING the month there was a large gain in residential building, compared with one year ago, while industrial construction held about even. Residential building for May is reported at 58,627,500 square feet against 56,990,000 square feet in April and 39,898,000 square feet in the like month of 1927. Industrial building was 6,221,800 square feet compared with 11,050,300 square feet in the preceding month.

FROM the the evidence of such important industries as building, automobiles and steel, it seems clear that business activities are holding up relatively better than they did at this time one year ago. This is all the more noteworthy because of the tradition of slow business which attaches to election years. So far nothing has happened in the political arenas to disturb business sentiment.

UNQUESTIONABLY, however, the period of seasonal slackening in industry is at hand. This is reflected in the substantial recessions during May in steel ingot production and in unfilled orders of the United States Steel Corp. Although the daily average rate of ingot ouput was the highest for any May in history, except May, 1923, it showed a drop of 9.5 per cent from the preceding April.

UNFILLED orders of the United States Steel Corp. fell off 455,311 tons in May, making a larger decline than had been expected. Current bookings of 3,416,000 tons are the lowest of any month since October, 1927. It is significant, however, that compared with one year ago bookings show an increase.

The Business Trend

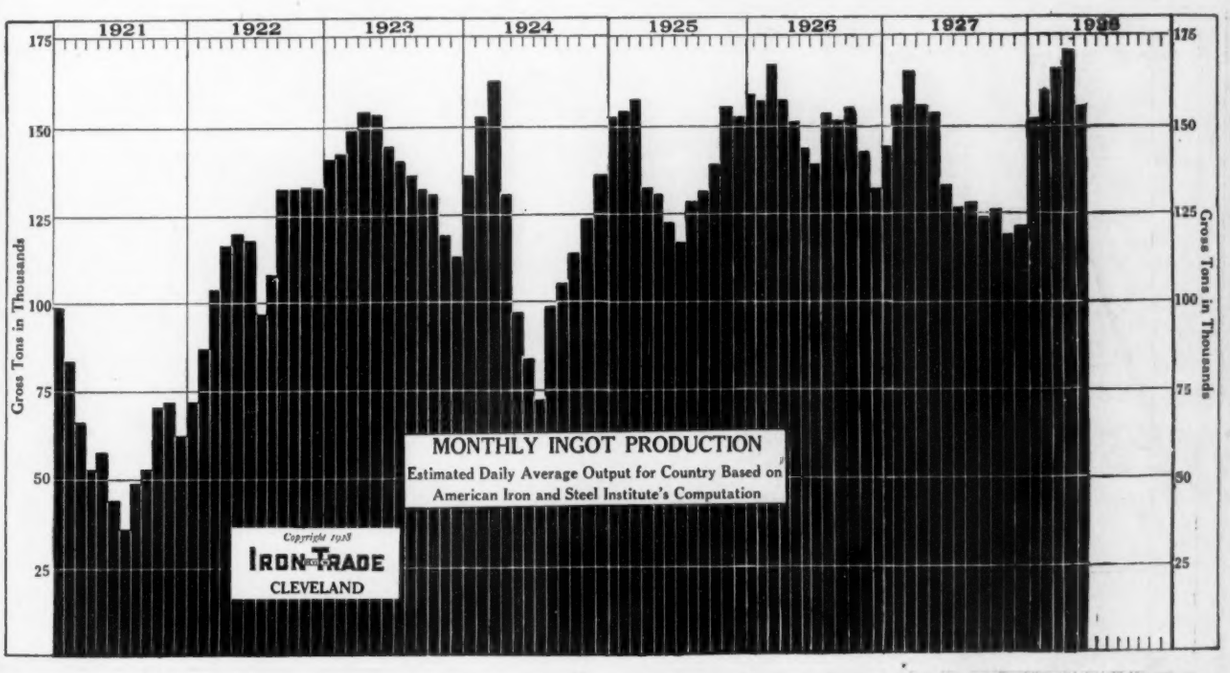


Steel Bookings

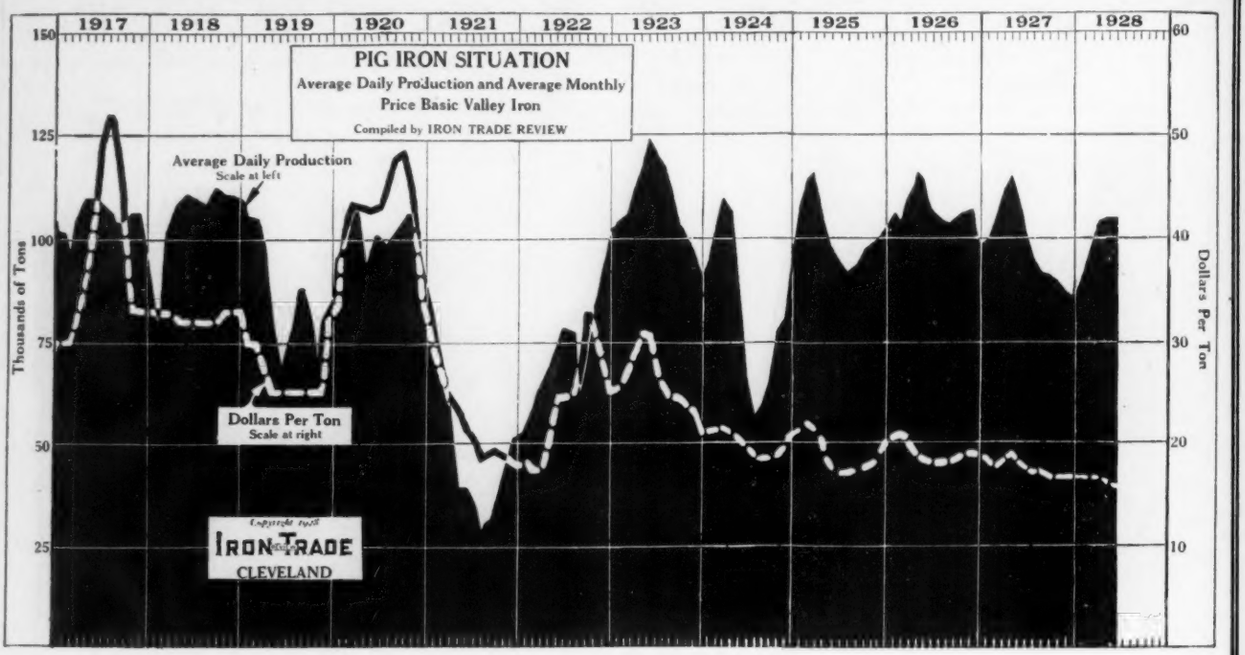
UNFILLED orders of the United States Steel Corp. declined 455,311 tons in May, bringing the total bookings to 3,416,822 tons against 3,872,133 tons one month before. During the last three months orders of the corporation have dropped by about 1,000,000 tons. They are now at the lowest point since October, 1927, but they are higher than they were one year ago. The increase over the bookings of May 31, 1927, of 3,050,900 tons is 360,000 tons. The decline in May exceeded expectations.

Monthly Ingot Output

THE daily average output of steel ingots of 155,674 tons in May was the highest ever reached in that month with the single exception of May, 1923. Compared with April there was a decline of 9.5 per cent and it was a trifle higher than the output of May, 1927. April's record was 172,103 tons and that for May one year ago was 155,663 tons. The total output for the first five months of the year amounted to 21,049,990 tons compared with 20,311,778 tons for the like period one year ago.



The Business Trend

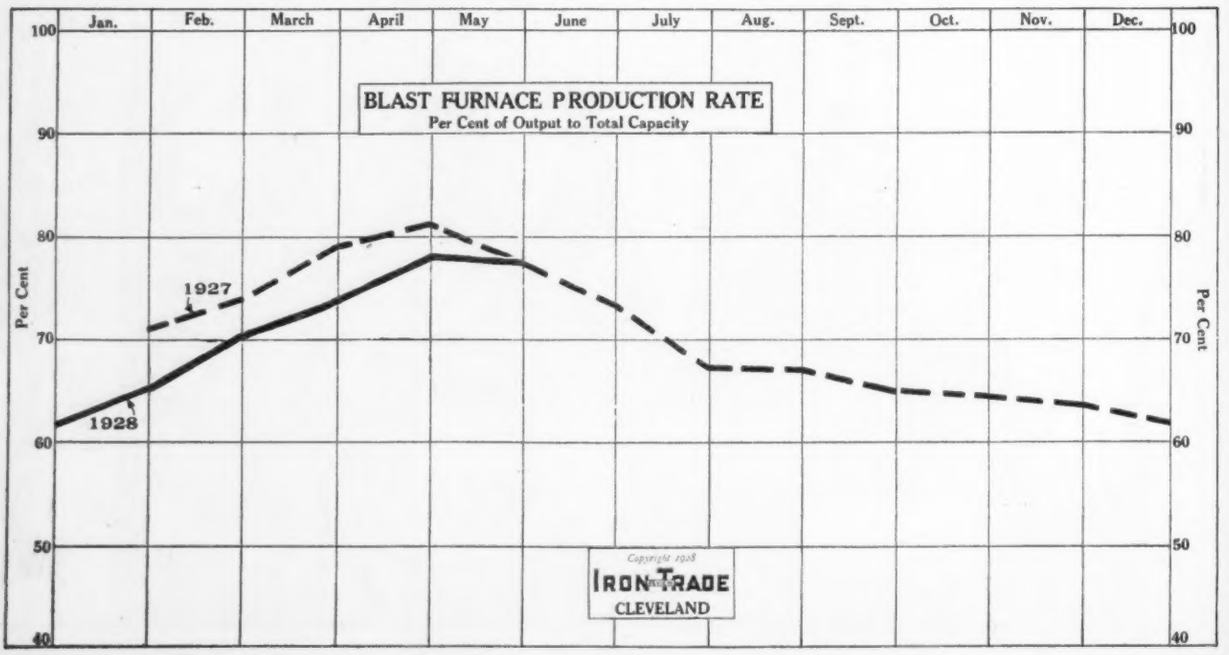


Pig Iron Situation

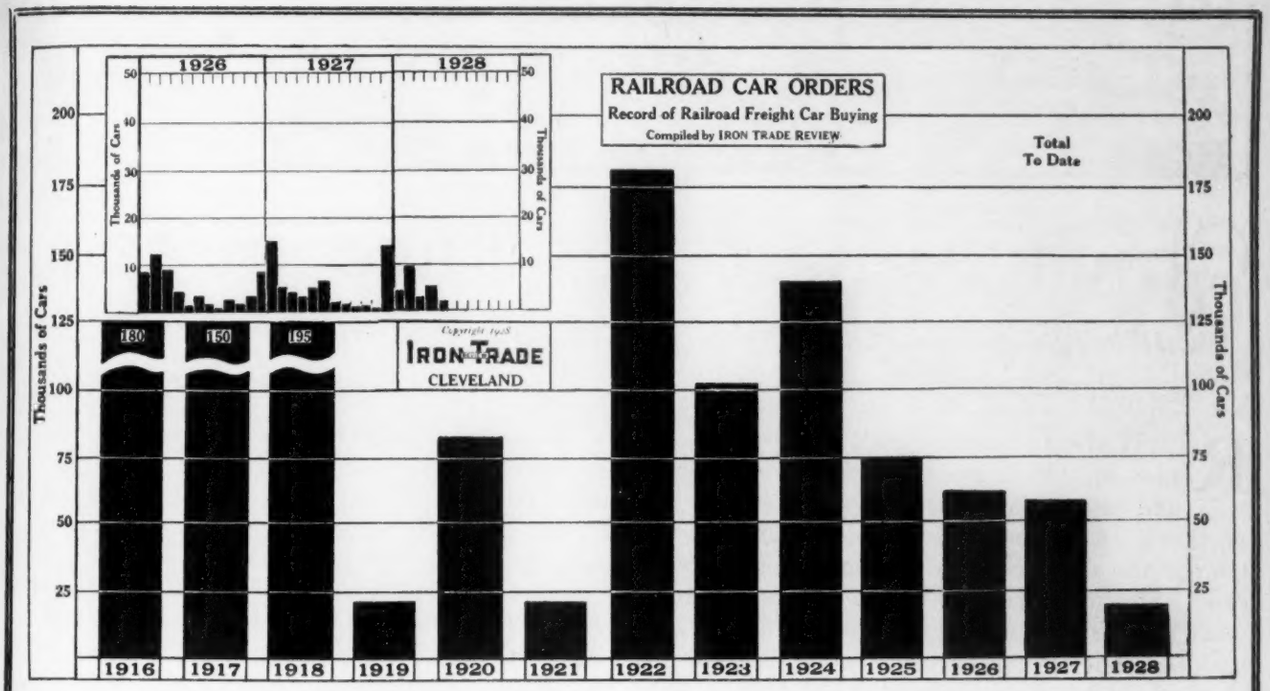
MAY brought a small decline in the production of pig iron. The daily average output was 105,962 tons compared with 106,066 tons in April and 109,388 tons in May, 1927. The decline from the preceding month was less than one-tenth of 1 per cent compared with a decrease of about 4 per cent in the corresponding period one year ago. Operations of pig iron this year have not made as sharp a peak as in preceding years and apparently the seasonal recession is to be more gradual.

Blast Furnace Rate

DURING May there was a small decline in the index based upon the relation of production of pig iron to capacity of furnaces. It stood at 77.9 compared with 78 one month before. In May, 1927, the index stood at 77.7. The coke pig iron capacity of the country as computed by the American Iron and Steel institute as of Dec. 31, 1927, is 44,605,720 tons. Although there was a small decline in pig iron production in May there was a gain of 3 in the number of furnaces in blast.



The Business Trend

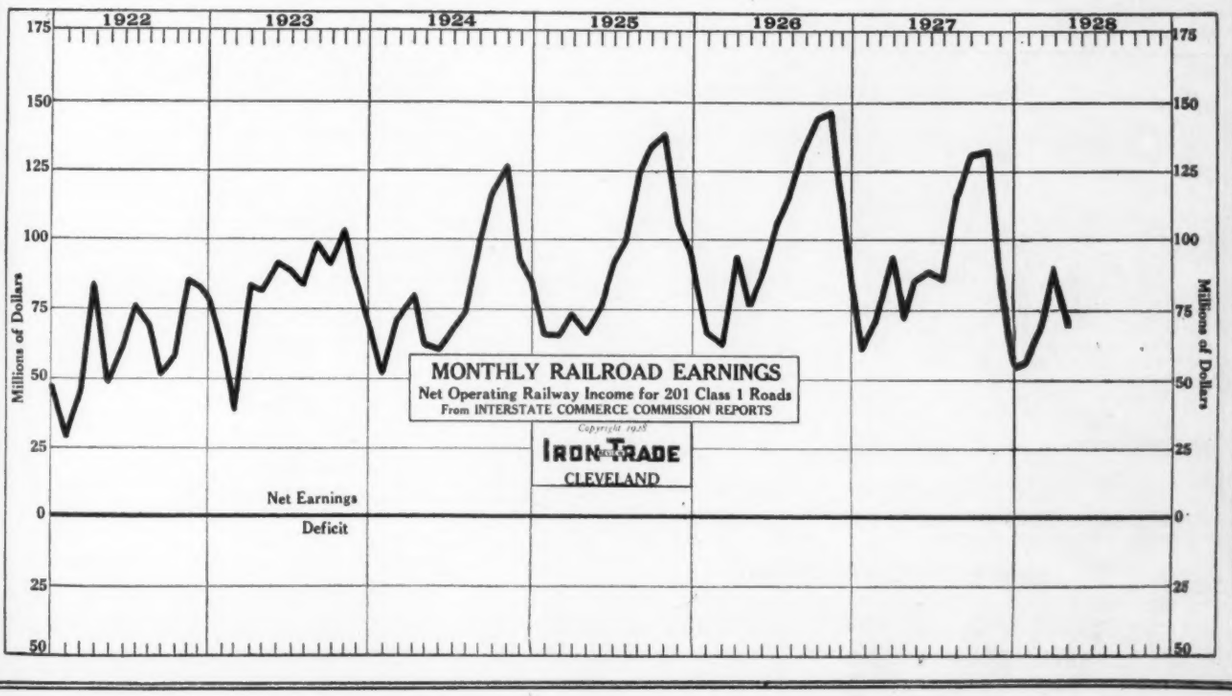


Freight Car Awards

RAILROAD purchases of new equipment declined to the lowest ebb of any month this year during May. Freight car orders for that month are estimated at 2079 against 5783 in April and 5425 in May, 1927. For the first five months of the year the total freight car awards amounted to 24,442 cars compared with 34,725 cars the corresponding period of one year ago. Since the beginning of the year freight car loadings have been running consistently below those of the preceding year.

Railroad Earnings

CLASS I railroads in April had a net operating income of $70,546,551 compared with $90,700,000 in March and with $73,502,000 in April, 1927. The earnings for April were at the annual rate of return of 4.07 per cent on their property investment. Gross operating revenues for the roads for April amounted to $474,310,000 compared with $498,926,000 in April, 1927. This was a decrease of 4.9 per cent compared with a decrease in operating expenses of 5.6 per cent.



Chicago, East Set Pace in Steel

Pittsburgh and Northern Ohio Lag in Sales and Output—June Rates Top Last Year—Pig Iron Prices Weak—Auto Needs Large

RESISTANCE to the oncoming summer dullness in steel is more pronounced at Chicago and in the East than in the Pittsburgh and northern Ohio districts, helping materially to temper the downtrend in both sales and production. Steelmaking as a whole continues somewhat heavier than a year ago, thus thinning down backlogs, but the latter are not a safe criterion of the industry because the uncertain price situation has deterred third quarter contracting.

Strength Withstands Decline in Ingot Output

The decline of 9.5 per cent in steel ingot output in May and the shrinkage of 455,311 tons in the unfilled orders of the United States Steel Corp. as of May 31 have dissipated some of the encouragement derived from the good showing of pig iron last month, yet the seasonal strength of the steel industry is marked. With half of June past, it is apparent that the month's pig iron total will approximate last June while ingot production will almost certainly be heavier. Recent weakness in basic pig iron in the Mahoning valley is a disturbing factor.

Automotive interests are not immune to the general tendency of consumption of iron and steel to ease off, but there are some indications it will be sixty days before schedules contract sharply. Thus far cancellations and holdups in the Detroit area have been strikingly few. Carbuilders have been fair buyers of steel at Chicago in the past week, but it will require heavy equipment buying, which is rumored of some of the larger roads, to make them a continuing factor. Building barely holds to the seasonal level and the oil country is a dry hole for iron and steel. It is the aggregate of small day-to-day orders that maintains mill schedules.

Iron Prices Weak While Steel Holds

Consumers are more firmly in the saddle in regard to pig iron prices than to steel. Viewed broadly, the price tendency in pig iron is downward, while in steel users are more inclined to hold for current levels than to seek reductions. Softer pig iron prices have stimulated inquiry, without a corresponding increase in third quarter bookings. In some of the lighter finished

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 13, 1928	May 1928	Mar. 1928	June 1927
PIG IRON				
Bessemer, del., Pittsburgh	$18.76	19.26	19.21	20.66
Basic, valley	16.00	16.20	17.00	17.90
Basic, eastern, del. eastern Pa.	19.10	19.10	19.50	20.75
*No. 2 foundry, del., Pittsburgh	18.76	18.86	19.01	19.96
No. 2 foundry, Chicago	18.00	18.20	18.50	20.00
*Southern No. 2 Birmingham	16.00	16.00	16.00	19.80
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	22.00
**No. 2X, Virginia furnace	20.50	20.50	20.50	22.00
**No. 2X, eastern, del. Phila.	21.26	21.26	21.26	22.01
Malleable valley	17.00	17.25	17.25	18.25
Malleable, Chicago	18.00	18.20	18.50	20.00
Lake Superior charcoal del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.76	18.76	18.51	19.51
Ferromanganese, del. Pittsburgh	109.79	109.79	104.79	94.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.60	2.55	2.60	2.85
Connellsville, foundry ovens	3.50	3.55	3.75	3.90
SEMIFINISHED MATERIAL				
Sheet bars open-hearth, Youngstown	32.50	33.10	33.75	33.75
Sheet bars open-hearth, Pittsburgh	34.00	34.00	33.70	33.50
Billets, open-hearth, Pittsburgh	33.00	33.00	33.00	33.00
Wire rods, Pittsburgh	44.00	44.00	44.00	42.00

	June 13, 1928	May 1928	Mar. 1928	June 1927
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.85	1.90	1.85
Steel bars, Chicago	2.00	2.00	2.00	2.00
Steel bars, Philadelphia	2.17	2.17	2.17	2.17
Iron bars, Chicago	2.00	2.00	2.00	2.00
Shapes, Pittsburgh	1.85	1.85	1.90	1.80
Shapes, Philadelphia	2.07	2.08	2.08	2.07
Shapes, Chicago	2.00	2.00	2.00	2.00
Tank plates, Pittsburgh	1.85	1.85	1.90	1.80
Tank plates, Philadelphia	2.10	2.05	2.10	2.17
Tank plates, Chicago	2.00	2.00	2.00	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.75	2.85	3.00
Sheets, blue anl., No. 10, Pittsburgh	2.00	2.00	2.10	2.25
Sheets, gal., No. 24, Pittsburgh	3.65	3.65	3.75	3.80
Sheets, black, No. 24, Chicago	2.85	2.85	3.05	3.15
Sheets, blue anl., No. 10, Chicago	2.20	2.20	2.25	2.40
Sheets, galvanized, No. 24, Chicago	3.75	3.80	3.90	4.00
Plain wire, Pittsburgh	2.50	2.50	2.50	2.40
Wire nails, Pittsburgh	2.60	2.60	2.65	2.50
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.45
SCRAP				
Heavy melting steel, Pittsburgh	14.75	15.00	14.75	15.10
Heavy melting steel, eastern Pa.	13.75	13.75	13.75	14.25
Heavy melting steel, Chicago	12.75	12.95	12.75	12.00
No. 1 wrought, eastern Pa.	15.25	15.25	15.25	16.75
No. 1 wrought, Chicago	12.90	13.05	12.45	12.10
Rails for rolling, Chicago	15.00	14.35	14.45	14.60

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.05c to 2.10c
New York, del.	2.125c to 2.175c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland	2.04c to 2.09c
Buffalo	2.00c
Coatesville, Sparrows Point	1.95c to 2.00c
Birmingham	2.05c
Pacific Coast, c.i.f.	2.25c to 2.30c

STRUCTURAL SHAPES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.06c to 2.18c
New York, del.	2.14c to 2.19c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland, del.	2.04c to 2.09c
Buffalo	2.00c
Bethlehem	1.95c to 2.00c
Birmingham	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh	1.85c to 1.90c
Chicago	2.00c
Birmingham	2.05c
Buffalo	2.00c
San Francisco	2.35c
Cleveland, mill	1.85c to 1.90c
Cleveland, delivered	1.87½c and 2.09c
Philadelphia, delivered	2.17c
New York, delivered	2.19c
Boston, delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.00c to 2.05c
Pittsburgh, forging quality	2.10c to 2.15c

RAIL STEEL

Chicago	1.85c to 1.90c
Eastern mills	1.75c

IRON

Chicago	2.00c
New York, delivered	2.14c to 2.24c
Philadelphia, delivered	2.12c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet	1.85c to 1.90c
Chicago, billet	2.30c to 3.00c
Chicago, rail steel	2.00c to 2.60c
Chicago, rail steel, road and bridge work	1.85c to 1.95c
Youngstown, billet	1.90c to 2.00c

COLD FINISHED STEEL

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.20c
Shafting (turned, polished) Pittsburgh	2.20c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.25c

TIN AND TERNE PLATE

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.10c

*Price subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh, base	2.65c to 2.75c
No. 24, Philadelphia, delivered	2.92c to 3.02c
No. 24, Gary, Indiana Harbor	2.80c to 2.85c
No. 24, Chicago, delivered	2.85c to 2.90c
No. 24, Birmingham, base	3.00c to 3.05c

TIN MILL BLACK

No. 28, Pittsburgh, base	2.90c
No. 28, Gary, base	3.00c

GALVANIZED

No. 24, Pittsburgh, base	3.60c to 3.75c
No. 24, Philadelphia, delivered	3.82c to 3.92c
No. 24, Gary, Indiana Harbor	3.70c to 3.75c
No. 24, Chicago, delivered	3.75c to 3.80c
No. 24, Birmingham, base	3.80c to 3.90c

BLUE ANNEALED

No. 10, Pittsburgh base*	1.95c to 2.10c
No. 10, Philadelphia, delivered	2.32c to 2.42c
No. 10, Gary, Indiana Harbor	2.15c to 2.25c
No. 10, Chicago, delivered	2.20c to 2.30c
No. 19, Birmingham, base	2.20c to 2.25c

*Plus 10 cents for 40 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh, base	4.00c

IRON

No. 10, Pitts., blue ann., c.l.	2.80c
No. 24, Pitts., box annealed, 1-pass cold rolled, carload	3.75c
No. 24, Pitts., gal., c.l.	4.85c

(*Turn to the following page*)

steel products a few contracts for the third quarter at today's prices have been closed, but in the heavier lines neither producers nor consumers have acted.

Pig iron sales at Cleveland in the past week have totaled 29,000 tons, with probably 50,000 tons for third quarter delivery on inquiry. Efforts to buy basic iron in the Mahoning valley at the recent low have not availed, some producers holding to a $16 minimum. No. 2 foundry is weaker at $16.75 to $17.25, valley. A St. Louis steelmaker has closed on 15,000 tons of basic. The $17, base, Buffalo, price for foundry iron has not been maintained in the East and $16.50 is being done. The spot market at Chicago is more active.

Semifinished Sympathetic to Basic Weakness

Blast furnaces using beehive furnace coke may quietly renew their arrangements for the next quarter. Foundry coke sales are more limited. The waiting attitude of consumers has weakened iron and steel scrap prices generally, and in some districts brokers are seeking to unload. Some Pittsburgh district users of semifinished steel are reported to have won a reduction of $1, withholding specifications until their invoices reflected the recent weakness in basic iron in the valley.

Structural shapes lead heavy finished steel demand at Pittsburgh, partially because makers talk of enforcing a 1.90c price for the third quarter. Barring the placing of some car steel at Chicago, plate markets in all districts lack tonnage. Bar sales at Chicago almost equal shipments. Automotive needs are the mainstay of Pittsburgh and Cleveland bar mills. Chicago mills are expected to continue their 2-cent price on heavy steel for next quarter.

Full Finished Sheet Needs Remain High

Pittsburgh district sheet mills have given more ground, being down to a 70 to 80 per cent operating rate. Practically all tonnage outlets are lighter buyers. Automotive industry needs for full-finished sheets maintain Mahoning valley mills at 85 per cent. Chicago mills feel the dearth of the lighter grades. Competition for galvanized sheet business is the sharpest and prices are commensurately variable. Some second half tin plate business is being placed at first half price.

The Seaboard Air Line has enlivened the car market by an inquiry for 1000 box cars. The Rock Island will buy 250 gondola bodies. In some quarters in it believed western roads, including the Illinois Central, will be in the car market soon.

Steel corporation subsidiaries are operating this week at 79 per cent, compared with about 83 per cent last week, while the entire industry averages 76 to 77 per cent. The Chicago district rate is 87 to 88 per cent, Youngstown 70 to 75 per cent, and Pittsburgh about 70 per cent.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (June 13, 1928)	$35.48
Last week (June 6, 1928)	35.46
One month ago (May, 1928)	35.54
Three months ago (March, 1928)	35.81
One year ago (June, 1927)	36.59
Ten years ago (June, 1918)	56.62
Fifteen years ago (June, 1913)	26.78

Slight readjustments in iron and steel prices have advanced the IRON TRADE REVIEW composite of fourteen leading iron and steel products 2 cents this week, to $35.48. A month ago this barometer of prices stood at $35.57.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIP

Hot strip, under 3-inch, Pitts. 2.10c to 2.20c
Hot strip, 3 to 6-inch, Pitts. 2.00c to 2.10c
Hot strip, 6 to 12-inch, Pitts. 1.85c to 1.90c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut lengths, 1.85c plate basis, or 1.95c blue annealed basis.
Hot strip, under 3-in., Chi..... 2.30c
Hot strip, 3 to 6-in., Chi..... 2.20c
Hot strip, 6 to 12-in., Chi..... 2.00c
Hot strip, 12 to 24 in., Chi.... 2.10c
blue annealed sheet basis.
Cold rolled strip, hard coils, 1½ inches and wider by 0.100-inch and heavier base, Pitts., Cleve., (over 3 tons) ..... 2.75c to 2.90c
Pitts., Cleve., (1-3 tons)..... 3.00c to 3.15c
Worcester, Mass. 3.05c

ALLOY STEEL

Hot Rolled

F.o.b. Pittsburgh or Cleveland

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net price 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium..	1.50	4.15
Carbon Vanadium	0.95	3.60
9250	0.25	2.90

TUBING

BOILER

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch 42½
Charcoal iron, 3¼ to 4½-inch 9
Seamless hot rolled 3¼ to 3½-inch.... 46

Further discounts of five to seven 5 per cents for carloads on lap welded steel. On seamless hot rolled several more 5 per cents, and on charcoal from one 10 per cent to two 10 and one 5 per cents.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities

Random lengths over 5 feet.....55 per cent
Selected lengths, 1 to 18 ft.....53 per cent

WIRE PRODUCTS

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base. Dealers 5 cents per 100 pounds extra

Bright plain wire, No. 9 gage.. 2.50c
Annealed fence wire 2.65c
Galvanized wire, No. 9 gage.... 3.10c
Barbed wire, painted 3.10c
Barbed wire, galvanized 3.35c

Per 100 lbs.

Wire nails ..... $2.55 to 2.65
Galvanized nails ..... 4.55 to 4.65
Polished staples ..... 3.00 to 3.10
Galvanized staples ..... 3.25 to 3.35
Coated nails, 100 lb. kegs, Sept. 1, 1926 extras apply.... 2.55 to 2.65
Woven wire fencing (retailers) 12½ gage, 26-in. high, 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts..... $20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

CAST IRON WATER PIPE

Prices per net ton

Class B Pipe

Six inch and over, Birming'm $31.00 to 33.00
Four-inch, Birmingham ..... 35.00 to 37.00
Four-inch, Chicago ..... 43.20 to 45.20
Six-inch to 24-inch, Chicago..... 39.20 to 41.20
Four-inch, New York ..... 41.50 to 42.60
Six-inch and over, New York 38.25 to 38.60
Standard fittings, Bir. base..... $100.00
Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

CHAIN, PILING, CUT NAILS

Cut nails, c.l., f.o.b. mills 2.80c
Chain, 1-in., proof coil, Pitts..... 6.00c
Sheet piling base, Pittsburgh.. 2.25c to 2.25c

RAILS, TRACK MATERIAL

Standard bessemer rails, mill $43.00
Standard open-h'th rails, mill $43.00
Relaying rails, St. Louis.....$24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb..$27.00 to 30.00
Light rails, 25 to 45, mills..... $36.00
Angle bars, Chicago base..... 2.75c
Spikes, railroad, Pittsburgh.... 2.80c
Spikes, small railroad, ⅞-inch and smaller, Pitts..... 2.80c
Spikes, boat and barge, Pitts. 3.00c
Spikes, railroad, Chicago 2.80c
Track bolts, Pitts., stand..... 70 off list
Track bolts, Chicago 3.80c
Tie plates, Chicago, Pitts..... $43.00

BOLTS AND NUTS

F.o.b. basing points, Pittsburgh, Cleveland Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread ..... 60 to 70 off
Rolled thread ⅜x6 and smaller take 10 per cent lower list.
Eagle list ..... 60 to 70 off

MACHINE BOLTS

All sizes, cut thread ..... 60 to 70 off
Rolled thread ⅜x6 and smaller take 10 per cent lower list.
Lag screws ..... 60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads 60 to 70 off
Tap bolts ..... 60 to 70 off
Blank bolts ..... 60 to 70 off
Stud bolts without nuts..... 60 to 70 off
Stove bolts, 75, 20, 10, and 5 off in pkgs. 75, 20, 10 and 5 with 2½ off in bulk.
Tire bolts .....60-5 off

NUTS

Semifinished ..... 60 to 70 off

HEXAGON CAP SCREWS

Milled .....80-10-10 off
Upset 1 in. diam. and smaller.....80-10-10 off

SQUARE HEAD SET SCREWS

Milled .....80-10 off
Upset 1in. diam and smaller.....80-10-10 off

RIVETS

Struct., c.l., Pitts.-Cleve..... 2.90c
Structural, c.l., Chicago..... 3.00c
**⅞-inch and smaller, Pitts.....70 and 10 off
Chi., Cleve. .....70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist..... $6.50 to 6.75
Wrought, c.l., Chicago dist.....$6.70 to 6.90 off
Lock: To dealers .....85-5 off
Lock: To consumers .....85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth..... $33.00
Pittsburgh, bessemer 33.00
Youngstown 33.00
Cleveland 33.00
Philadelphia 38.30
Chicago 34.00
Forging, Chicago ..... 39.00 to 43.00
Forging, Pittsburgh 38.00
Forging, Philadelphia 43.30

SHEET BARS

Pittsburgh 34.00
Youngstown ..... 32.50 to 34.00
Cleveland ..... 32.50 to 33.00
Chicago 35.00

SLABS

Pitts., Young., and Cleve..... $33.00

WIRE RODS

Pittsburgh, Cleveland $44.00
Chicago 45.00

SKELP

All grades, Pittsburgh ..... 1.85c to 1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%.... $4.55
Mesabi bessemer, 51½% 4.40
Old range bessemer 51½%..... 4.40
Mesabi nonbessemer, 51½%..... 4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 58-63%..... 8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent ..... nominal

FOREIGN IRON ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese 10.00 to 10.50
North African low phosphorus nominal
Swedish foundry or basic, 65% 9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent..... 8.50 to 9.00
Newfoundland foundry, 55%.... 8.50 to 9.00

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian .....36 to 38 cents
Indian .....36 to 38 cents
Caucasian (53-55 per cent) ....38 to 40 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton....$15.00 to 16.00
Washed gravel, imported duty paid, east. tidewater, net ton 15.50 to 16.00

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania .....$43.00 to 46.00
Ohio ..... 43.00 to 46.00
Illinois ..... 43.00 to 46.00
Kentucky ..... 43.00 to 46.00
Missouri ..... 43.00 to 46.00
Maryland ..... 43.00 to 46.00
Georgia and Alabama ..... 40.00 to 45.00

Second Quality

Pennsylvania ..... 35.00 to 38.00
Ohio ..... 35.00 to 38.00
Illinois ..... 35.00 to 38.00
Kentucky ..... 35.00 to 38.00
Missouri ..... 35.00 to 38.00
Maryland ..... 35.00 to 38.00
Georgia and Alabama ..... 30.00 to 35.00

SILICA BRICK

Pennsylvania 48.00
Joliet, Ill., East Chicago, Ind.... 52.00
Birmingham 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½ 65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite.... 40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base.

9 x 4½ x 2½ 45.00

Pig Iron

Interest Revives for Third Quarter, with Many Inquiries Pending—Market Trend Is Easier—Fail to Duplicate $15.35 on Basic

MORE activity is developing in the pig iron market, with the approach of third quarter. The volume of business is increasing slightly, while inquiries show considerable improvement, especially in the Ohio, Michigan and Indiana districts. Recent low prices have stimulated interest, while at the same time causing buyers to adopt a cautious attitude. Users and middle interests have endeavored vainly to place orders for basic at $15.35, valley, which was done recently on a large tonnage of basic, and on new inquiries for 5000 and 10,000 tons the minimum quotation was $16. The general market, however, felt some effect from the $15.35 price of basic. Small tonnages of foundry are reported sold at $16.75, base, valley, although $17 is more general and $17.25 persists.

PITTSBURGH, June 12.—Buyers of basic iron, both consumers and middle interests, offered in the past week to purchase 5000 and 10,000 tons if given the same price that recently was developed. A valley steelworks interest refused to duplicate its former selling price of $15.35, valley, and quoted $16. This figure also was quoted by merchant interests, and no sales were made. Bessemer iron was sold in small lots at $17 and $17.25, valley, but users generally are deferring action on third quarter requirements. The recent sharp decline in the price of basic had a double effect on foundry iron, causing the issuance of more inquiries, but causing buyers to become more conservative in purchasing. One middle interest reports his sales in the past week or ten days amounted to 3000 tons, made up of numerous small lots of different grades of foundry iron, on a basis of $17, valley, low phosphorus and special irons. One merchant interest sold 2500 tons involving a small lot of No. 3, at $16.75, valley, and the remainder No. 2X at $17.25, valley, which authenticates a $17 valley figure for No. 2 plain. Another merchant interest sold a few tonnages for nearby delivery at $16.75, base, valley. About ten foundry inquiries are pending here, involving 50 to 300 tons, including one from the Elliot Co. for 200 tons, and one from the Norfolk & Western for 300 tons of malleable and bessemer. The recent 4000-ton inquiry from the Columbia Radiator Co., McKeesport, Pa., is understood to have been only partially covered. Low phosphorus is quoted $26, valley, but is inactive. Some customers of an eastern furnace are closing for third quarter at $23, furnace, on a $5.42 freight rate.

The recent transaction involving basic iron for a Butler, Pa., consumer involved 46,000 tons, it now develops. Of this 16,000 tons was sold by a valley steelmaker and the remainder by a Pennsylvania steelmaker.

Buffalo, June 12.—Buffalo furnaces report the tendency to get full prices for all grades of pig iron is more pronounced among all producers here. June buying has been small, as is pending inquiry. Furnace operation is unchanged with 12 stacks in the district in blast and nine idle. Heavy shipments of iron are being made by barge canal, last week's shipments by that route being 15,323 tons, probably a new record for seven days. The total of shipments east out of Buffalo so far this year is 37,754 net tons, of which 8883 net tons came from Cleveland.

New York, June 12.—A number of moderate size lots of pig iron were closed in this territory during the past week. New inquiry is rather small. The usual price on Buffalo foundry iron for shipment to this district now is $16.50, base, Buffalo, on which most of the selling in this territory is based.

The New York Airbrake Co. is inquiring for 200 tons of low phosphorus iron, silvery iron and spiegeleisen.

Pig Iron Prices

Per Gross ton

Bessemer, valley furnace	$17.00 to 17.25
Bessemer, del., Pittsburgh	18.76 to 19.01
Basic, valley furnace	15.75 to 16.00
Basic, del., Pittsburgh	17.51 to 17.76
Basic, Buffalo furnace	17.00
Basic, del., eastern Pa.	19.00 to 19.25
Malleable, valley furnace	17.00 to 17.25
Malleable, del. Pittsburgh	18.76 to 19.01
Malleable, del. Cleveland	18.50
Malleable, Chicago furnace	18.00
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa.	20.75 to 21.25
No. 1 foundry, Chicago furnace	18.50
No. 1X, eastern del., Phila.	21.76
No. 1X, Buffalo furnace	18.50
No. 2 foundry, valley furnace	16.75 to 17.25
No. 2 foundry, del., Pittsburgh	18.51 to 19.01
No. 2 plain, Everett, Mass., fur.	19.00 to 21.00
No. 2 plain, Buffalo furnace	17.00
No. 2 foundry, Chicago furnace	18.00
No. 2 foundry, Granite City	19.00 to 19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.50
No. 2 plain, del. Phila	20.76
No. 2 plain Virginia furnace	20.00 to 20.50
No. 2 plain, N. J., tidewater	19.78 to 21.76
No. 2 foundry, east N. Y. fur.	18.00
No. 2 Alabama, Birmingham	16.00
No. 2 Alabama, del. Cincinnati	19.69
No. 2 Tenn., Birmingham base	16.00
No. 2 Tenn., del., Cincinnati	19.69
No. 2 Alabama, del. Chicago	22.01
No. 2 Ala., del. Chicago, river-rail	20.18
No. 2 Alabama, del. Cleveland	22.01
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	19.78 to 22.26
No. 2X, eastern, del. Phila.	21.26
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	23.15 to 23.65
No. 2X, Virginia furnace	20.50
Gray forge, val., del., Pittsburgh	18.76
Low phos., standard, valley	26.50
Low phos., standard, Phila.	24.76 to 27.29
Low phos. copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del., Chicago	27.04

Silvery iron, Jackson county (Ohio) furnace in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36 14—$38; 15—$40.50; 16—$43.

New York Central railroad is inquiring for 410 tons of foundry and miscellaneous grades of pig iron for its Frankfort, New York and Elkhart, Ind., shops.

Boston, June 12.—Competition in the pig iron market is about the keenest in several years. The price situation is unsettled, with Buffalo, New York state furnaces and Mystic Iron Works competing for the major part of the business. The General Electric Co. is expected shortly to close for a round tonnage for its New England plants. Several other inquiries have been issued for lots ranging from 100 to 1000 tons.

Cleveland, June 12.—Pig iron sales and inquiries are increasing with the approach of the third quarter. Cleveland blast furnace interests booked 29,000 tons in the past week, compared with 22,000 tons in the week preceding. All makers report substantial inquiries from Ohio, Indiana and Michigan melters, one claiming to have 50,000 to 60,000 tons pending. Open market business, however, does not appear to be much over 10,000 tons, including several fair size lots ranging up to 2000 and 3000 tons. One producer in checking over its orders in recent months finds that 50 per cent are of the carload class, the same volume of business being spread over a far greater number of orders than formerly. Shipments are holding up to a satisfactory level, though not so large with most makers as in May. While a considerable tonnage of pig iron made in Cleveland has been sold for delivery by vessel to Chicago territory, a report of the Buffalo canal barge fleets shows the extent of sales of Cleveland iron for delivery in eastern districts. The total shipments eastward out of Buffalo so far this year is 37,754 tons, which includes 8883 tons from Cleveland furnaces. Usual prices applying on sales for rail shipments to outside districts are $16.25 to $17, base, Cleveland, while $18, base, furnace, still is quoted for local shipment. In Michigan territory the general prices are $17.50 to $18, base, furnace.

Cincinnati, June 12.—Sentiment is brighter in the pig iron market, more inquiries being in the hands of dealers. An inquiry has been received from the Ford Motor Co. for 700 tons of 14 to 16 per cent silvery iron. The Richmond Malleable Castings Co.,

(*Concluded on Page* 1573)

Coke

Furnaces Preparing to Renew Contracts for Third Quarter—Demand From Foundries Slow

BLAST furnace interests are preparing to renew with their sources of supply contracts for third quarter, but little activity is appearing in the open market. Beehive production is more evenly balanced with consumption resulting in a slightly firmer tone, though occasional spot sales are noted at $2.60 to $2.75. Some producers intimate they will insist on $3 for third quarter contracts.

Pittsburgh, June 12.—Beehive coke consumption and production are about evenly balanced, with only occasional spot sales of limited tonnages at $2.60 to $2.75. One Middle Western smelter and refiner purchased 750 tons in the past week at that range. Another buyer using a carload per month, and lately depending on doing $2.65 in the spot market, has been notified of an advance of 10 cents, and may now contract ahead. Blast furnaces are staying in the background, with reference to third quarter contracts, but it is understood some of them contemplate renewing their arrangements with present sources late this month. Some makers are starting to talk of $3 as a possible quotation for that class of trade. Foundry coke sales are more limited. Small purchases are noted, all the way from $3.50 to $4.50, although the more common quotations are $3.75 to $4.25. Two premium brands are commanding $4.85 in open top cars.

Production of coke in the Connellsville region in the week ended June 2 was 44,120 tons, against 43,760 tons in the preceding week, according to the *Connellsville Courier*.

Boston, June 12.—The past few days reflected a slight falling off in demand for foundry coke. Prices are steady.

New York, June 12.—By-product coke prices here are being cut 75 cents to $1 per ton. The last half prices are to be named shortly.

Cincinnati, June 12.—Demand for foundry coke is lighter. New River foundry coke is down 50 cents to $6.50 to $7.50. Wise county furnace coke also is down to $4.50 to $4.75.

St. Louis, June 12.—Prices and the general aspect of the coke market have not changed since the end of May. Contracting for metallurgical and industrial coke has made good progress, and according to the by-product interests is about on a parity with the corresponding period of last year. Prices are unchanged.

Birmingham, Ala., June 12.—Better feeling is noted in the coke market as the time approaches for renewal of contracts. Shipment of 1000 tons to California points by water and exporting of 500 tons of pitch coke are features of the market. The base price is firm at $5 for the foundry grade.

Coke Prices

Beehive Ovens

Prices per Net Ton

Connellsville furnace	$2.60 to 3.00
Connellsville foundry	3.50 to 4.25
New River foundry	6.50 to 7.50
New River furnace	6.00
Wise county foundry	5.00 to 5.25
Wise county furnace	4.00 to 4.75

By-Product Foundry

Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	9.00
New England, del.	11.00
St. Louis	9.00
Birmingham	5.00
Indianapolis, del.	8.75
Ashland, Ky.	7.00
Portsmouth, O.	7.00
Detroit, ovens	9.00
Buffalo, ovens	9.00

Ferroalloys

Specifications Are Slowing Up—Prices Continue Steady in All Markets

Pittsburgh, June 12.—Ferroalloy contract specifications have dwindled in proportion to restricted steel mill operations. Many of the smaller steel interests have contracted for last half ferromanganese at $105, seaboard, being protected against price decline. Some English sellers are encouraging their trade to take action, by indicating an additional price advance due to the fact that English ferromanganese prices on the European continent are high. No such intimations are forthcoming from American producers. All sellers are adhering firmly to $105. While E. J. Lavino & Co. is understood to have resumed spiegeleisen manufacture at one of its furnaces, the leading spiegeleisen producer reports that practically all of its customers, particularly in this section, are now under cover for the last half at the same figures they have paid during the first half.

New York, June 12.—Special ferroalloys are steady all through the list. Ferrovanadium formerly was sold f.o.b. producing plant and now is sold "freight allowed" but without any change in price. Tungsten is quiet, with asking prices of wolframite ore $11.00 to $11.25 a short ton unit. Asking prices for ferrotungsten are 96.00c to 98.00c a pound contained.

Chicago, June 12.—While a few users of ferromanganese are holding back on last half contracting, a considerable tonnage has been placed at $105, seaboard. An occasional carlot of spiegeleisen is bought at $32, eastern furnace, for 19 to 21 per cent material.

Iron Ore

Market Firmer Than Last Year—Volume Also Likely To Be Larger

IRON ORE PRICES, PAGE 1558

Cleveland, June 12.—One or two requirements for Lake Superior iron ore still are being negotiated, but the tonnages are small. Producers say the price situation is better than at this time last year. While reports have appeared of the slow movement of ore, producers say they have no reason for complaint, and still cling to their estimate that the sum total of business this season will be a little in excess of that of last year. Following is the Lake Superior Iron Ore association's report of receipts and shipments at Lake Erie ports this season to June 1:

Port	Receipts	Shipments	Dock balance June 1, 1928
Buffalo	318,640	3,090	5,235
Pt. Colborne	55,148	60,386	63,127
Erie	708,245	977,635	1,212,883
Conneaut	529,173	721,058	1,729,112
Ashtabula	139,778	208,790	259,417
Fairport	582,571	455,217	1,092,690
Cleveland	305,053	205,747	124,537
Lorain	70,798	98,998	373,509
Huron	138,682	73,927	74,054
Toledo	2,848,088	2,804,848	4,934,564
Comparative total 1 Yr. previous	5,701,987	5,105,722	4,756,173

Foundry Executive Dies

Charles T. Strawbridge, 70, vice president of the Bass Foundry & Machine Co., Fort Wayne, Ind., died June 10 at his home in that city. Mr. Strawbridge had been with the Bass company for 49 years, most of that time as an executive. He was born in Blooming Grove, Morrow county, O., and went to Fort Wayne in 1877.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent domestic furnace	31.00 to 32.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	96.00 to 98.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Scrap

Waiting Attitude Causes Weakness—Prices Slip to Lower Levels and Consumers Hold Back

CONSUMERS of iron and steel scrap are remaining out of the market and some prices are lower as a result. Some cancellations by dealers have been made at Pittsburgh with others to follow. Brokers seek to unload accumulations in expectation of a dull summer.

Chicago, June 12.—Sentimental weakness again has developed in the iron and steel scrap market, but the softening tendency has failed to reflect in consumer quotations, which remain practically unchanged. Dealer trading in heavy melting steel is at $12.75 to $13, and consumer quotation is nominal at $12.75 to $13.25. Dealers are collecting pick-up tonnages of melting steel for a leading steelworks consumer at $13. Brokers are more eager to unload material at present prices, due in part to a feeling that a decline in some lines of consumption is inevitable during part of the summer season. Scrap has been coming out freely. Cast borings continue at $9 to $9.50 with one consumer doing most of the buying. Cast scrap gives some evidence of strength, particularly No. 1 machinery grade. A consumer paid $12 for a tonnage of hydraulic compressed sheets, representing an advance of 50 cents.

Boston, June 12.—Prices for various lines of scrap continue to hold in a narrow range, with no considerable business. Skeleton is quoted on the wide range of $5.50 to $7, resulting from varying quality, while a slightly lower price is asked for forge flashings. On the other hand, railroad malleable is a shade firmer and rails

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except Detroit where dealers' buying prices are shown

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$10.25 to 10.50
Boston, dealers	8.50 to 9.00
Buffalo, No. 1	14.25 to 14.75
Buffalo, No. 2	12.50 to 13.00
Chicago	12.75 to 13.25
Cincinnati, deal.	11.00 to 11.50
Cleveland, No. 1	13.00 to 13.50
Cleveland, No. 2	12.25 to 12.75
Detroit, No. 1	11.00 to 11.25
Eastern Pa.	13.50 to 14.00
Eastern Pa., No. 2	11.00
Bethlehem delivery	13.00 to 13.50
N. Y., deal., R. R.	10.00 to 10.35
N. Y. deal., yd.	6.25 to 6.50
Pittsburgh, No. 1	14.25 to 15.00
St. Louis, No.1	12.00 to 12.50
St. Louis, No.2	10.75 to 11.25
Valleys, No. 1	14.25 to 14.75

COMPRESSED SHEETS

Buffalo	12.75 to 13.25
Chicago	11.50 to 12.00
Cleveland	12.50 to 12.75
Detroit	10.25 to 10.50
Pittsburgh	14.25 to 14.50
Valleys	13.75 to 14.00
E. Pa. new mat.	11.50 to 12.00

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cincinnati, deal	9.50 to 9.75
Cleveland	11.50 to 12.00
Eastern Pa.	10.00 to 10.50
Pittsburgh	13.25 to 13.50
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.50 to 9.00
Detroit	7.00 to 7.50
St. Louis	7.75 to 8.25

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Boston	8.50 to 9.00
Buffalo	16.00 to 16.50
Chicago	15.50 to 16.00
Cincinnati, deal.	15.25 to 15.75
Detroit	11.00 to 11.50
St. Louis	15.50 to 16.00

STOVE PLATE

Birmingham	13.50 to 14.00
Boston, consumers	10.00
Buffalo	13.00 to 13.25
Chicago, net	11.50 to 12.00
Cinn., deal., net	8.00 to 8.50
Cleveland	12.00 to 12.50
Detroit, net	10.75 to 11.25
Eastern Pa.	11.00 to 11.50
N. Y., deal., mill.	6.75 to 7.00
Pittsburgh	11.50 to 12.00
St. Louis	12.00 to 12.50

SHOVELING STEEL

Chicago	12.75 to 13.25
Pittsburgh	10.50 to 10.75
St. Louis	11.00 to 11.50

KNUCKLES, COUPLERS SPRINGS

Buffalo	15.50 to 16.00
Chicago	14.50 to 15.00
Eastern Pa.	15.50 to 16.00
Pittsburgh	15.50 to 16.00
St. Louis	12.50 to 13.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.50 to 17.00
Cincinnati, deal.	12.25 to 13.25
Eastern Pa.	17.50 to 18.50
Pitts. billet and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	14.00 to 14.50
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Buffalo	14.00 to 14.50
Chicago	14.50 to 15.00
St. Louis	12.00 to 12.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	9.00 to 9.50
Buffalo, No. 1	12.00 to 12.50
Buffalo, No. 2	14.25 to 14.75
Chicago, No. 1	12.90 to 13.45
Chicago, No. 2	12.75 to 13.25
Cinn., No. 1 deal.	10.50 to 11.00
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.00 to 11.50
Pittsburgh, No. 1	11.00 to 11.50
Pittsburgh, No. 2	14.25 to 15.00
St. Louis, No. 1	9.50 to 10.00
St. Louis, No. 2	10.75 to 11.25

WROUGHT PIPE

Boston, dealers	7.00 to 7.50
Eastern Pa.	12.00 to 12.50
Buffalo	12.00 to 12.50
New York, deal.	8.00 to 8.50

YARD WROUGHT

Boston	8.00 to 8.50
Eastern Pa.	14.50 to 15.00

BUSHELING

Buffalo	12.75 to 13.25
Chicago, No. 1	11.00 to 11.50
Chicago, No. 2	8.50 to 9.00
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.00 to 6.50
Cleveland, No. 2	9.25 to 9.50
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	9.50 to 10.00
Detroit, mixed	7.25 to 7.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	5.50 to 5.75
Buffalo	9.00 to 9.50
Chicago	6.75 to 7.25
Cincinnati, deal	7.50 to 8.00
Cleveland	6.50 to 7.00
Detroit	5.25 to 5.50
Eastern Pa.	10.00 to 10.50
New York, deal.	6.25 to 6.85
Pittsburgh	9.25 to 9.50
St. Louis	7.00 to 7.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	5.50 to 5.75
Buffalo	9.50 to 10.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.25 to 9.50
Detroit	7.00 to 7.50
Eastern Pa.	10.00 to 10.50
New York, deal.	6.50 to 6.85
Pittsburgh	10.50 to 10.75

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	8.00 to 9.00
Boston, chem.	9.50 to 10.00
Boston, dealers	5.50 to 5.75
Buffalo	9.75 to 10.25
Chicago	9.00 to 9.50
Cincinnati, deal.	8.25 to 8.75
Cleveland	9.25 to 9.50
Detroit	7.00 to 7.25
Eastern Pa.	10.50 to 11.00
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	6.50 to 6.85
Pittsburgh	10.50 to 10.75
St. Louis	8.75 to 9.25
Valleys	13.50

PIPES AND FLUES

Chicago, net	8.50 to 9.00
Cincinnati, deal.	7.00 to 7.50
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.25 to 11.75
Chicago, net	11.25 to 11.75
Eastern Pa.	11.50
New York, deal.	8.00 to 8.50
St. Louis	11.00 to 11.50

FORGE FLASHINGS

Boston, dealers	6.00 to 7.00
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleve., over 10 in.	11.75 to 12.25
Detroit	9.00 to 9.50
Pittsburgh	13.00 to 13.50

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	15.50 to 16.00
Eastern Pa.	11.00 to 11.50

ARCH BARS AND TRANSOMS

Chicago, net	19.50 to 20.00
St. Louis	19.50 to 20.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal	6.75 to 7.00
Buffalo	12.00 to 12.50
Chicago	10.25 to 10.75
Cleveland	12.00 to 12.25
Eastern Pa.	12.00 to 12.50
Pittsburgh	13.00 to 13.50
St. Louis	9.50 to 10.00

STEEL CAR AXLES

Birmingham	17.00 to 17.50
Boston, ship. point	15.50 to 16.00
Buffalo	16.75 to 17.25
Chicago	17.65 to 18.20
Cleveland	16.00 to 16.50
Eastern Pa.	19.00 to 20.00
Pittsburgh	17.50 to 18.00
St. Louis	18.00 to 18.50

SHAFTING

Boston, ship. point	13.00 to 13.50
Chicago	17.35 to 17.90
Eastern Pa.	17.50 to 18.00
New York, deal.	14.00 to 14.50
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	12.00 to 12.50
Boston, con.	14.00 to 14.50
Buffalo, iron	12.75 to 13.25
Buffalo, steel	15.25 to 15.75
Chicago, iron	13.25 to 13.75
Chi., rolled steel	15.75 to 16.25
Cincinnati	12.00 to 12.50
Eastern Pa.	16.00
N. Y., iron, deal.	11.50 to 12.00
Pittsburgh, iron	14.00 to 14.50
Pittsburgh, steel	15.50 to 16.00
St. Louis, iron	13.00 to 13.50
St. Louis, steel	13.25 to 13.75

NO. 1 CAST SCRAP

Birmingham, cup.	14.00 to 14.25
Boston	14.00 to 14.50
Boston, textile	13.25 to 13.50
Buffalo	14.50 to 15.00
Chicago, machiny.	15.95 to 16.50
Chicago, railroad.	14.30 to 14.85
Chicago, agri.	14.00 to 14.55
Cincinnati, mach. cupolas, net deal.	14.50 to 15.00
Cleveland, cupola	15.50 to 16.50
Detroit, net	12.25 to 12.75
Eastern Pa. cupola	16.00
N. Y., cup., deal.	13.00 to 13.50
Pittsburgh, cupola	14.00 to 14.50
San Fran., del.	20.00 to 21.00
Seattle	14.50 to 15.00
St. Louis, railroad	13.00 to 13.50
St. Louis, agri.	13.00 to 13.50
St. Louis, machy.	13.00 to 13.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.50 to 12.00
Cleve., breakable	12.25 to 12.50
Detroit, auto., net	20.00 to 21.00
Detroit mach., net	12.75 to 13.25
Eastern Pa.	15.50
New York, deal.	11.50 to 12.00
Pittsburgh	12.00 to 12.50

MALLEABLE

Boston, railroad	13.50 to 14.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, railroad	13.00 to 13.50
Cinn., R. R., deal.	12.00 to 12.50
Cinn., agri., deal.	11.75 to 12.25
Cleveland, agri.	15.00 to 15.50
Cleveland, rail.	15.50 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, rail.	15.00 to 15.50
St. Louis, agri.	11.50 to 12.00
St. Louis, rail.	11.50 to 12.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	12.00 to 12.25
Boston, dealers	9.50 to 10.00
Buffalo	14.25 to 14.75
Chicago	15.00 to 15.50
Eastern Pa.	14.75 to 15.25
New York	11.00 to 11.50
Pittsburgh district	16.50 to 17.00
St. Louis	13.00 to 13.50

LOCOMOTIVE TIRES

Chicago, No. 1	13.50 to 14.00
Chicago, cut	15.50 to 16.00
St. Louis, No. 1	12.00 to 12.50

LOW PHOS. PUNCHINGS

Chicago	14.50 to 15.00
Pittsburgh	16.50 to 17.00

for rerolling are somewhat easier.

Buffalo, June 12.—The scrap market is dull. Some large steelworks are restricting shipments. Dealers think prices are at bottom but admit inability to interest consumers in tonnage for future delivery at current quotations.

New York, June 12.—A reduction of about 50 cents in several grades features the dealers' scrap market. The grades affected are mixed borings and turnings, clean cast borings, yard steel, railroad steel, stove plate for mill consumption, skeleton steel and turnings. These reductions follow revisions at Bethlehem, Phoenixville, Pottsville, and Harrisburg, Pa., where actual trading has been done in each case.

Philadelphia, June 12.—In addition to about 100,000 tons of scrap shipped the past three months from Boston and New Orleans to Danzig and Genoa a considerable tonnage for Spain now is under negotiation. Europe takes substantially No. 2 heavy melting steel and the price appears $9 to $10 on dock. Several grades have declined 50 cents in the past week in Eastern Pennsylvania. These declines are being applied to unfilled tonnage contracts and little new buying is reported. Two eastern mills now accept automobile scrap. Most eastern mills have ceased buying borings as more desirable scrap is cheap. Blast furnaces now are the principal outlet for borings.

Pittsburgh, June 12.—Scrap shows further weak tendencies. Dealers who last Friday would pay as much as $14.50 for heavy melting steel at West Virginia consuming points will not pay more than $14.25 today. About $15 (some reports claim a few cents in advance of that figure) was the successful bid by mills on the Pennsylvania railroad's scrap list which closed last week. While consumers are not canceling, dealers and brokers are commencing to cancel and indicate that these cancellations will increase. The Monessen, Pa., mill has released its embargo. Specialties cannot be sold today for more than $15.50 to $16. On one inquiry for iron car wheels, $14.75 was quoted but proved uninteresting to the customer and some $14 to $14.50 quotations are out.

Cleveland, June 12.—Machine shop turnings have proved sympathetic to the increased offerings at Detroit and a $9 delivered price at Breckenridge, Pa., and are now no higher than $6.50 to $7. No. 2 heavy melting steel is a shade weaker, at $12.25 to $12.75. In the Mahoning valley, hydraulic compressed sheets are down to $13.75 to $14. Much steel continues to come by boat from Detroit. The melt is declining moderately, and supplies are large.

Cincinnati, June 12.—Scrap is moving in light specifications. Heavy melting steel which was quoted at $11.25 to $11.50 last week has been again reduced 25 cents to a spread of $11 to $11.50.

Detroit, June 12.—Iron and steel prices are softer but few actual changes have been made. Low prices produce sufficient buying to absorb heavy production and little change is expected to occur in the next month.

St. Louis, June 12.—Scrap dealers experience increased difficulty in obtaining orders, and contracts are shrinking to uncomfortably small proportions. Purchasing for immediate delivery is in small volume, and inquiry for late June and July shipment is practically absent.

The tone of the market is decidedly weak, and there have been several specific fractional reductions. No. 2 heavy melting steel has been marked down 25 cents, also miscellaneous rails and some other steel specialties.

Birmingham, Ala., June 12.—Consumers of iron and steel scrap are making their own prices in some items, a scarcity in one item has appeared and steady shipment in small lots is noted. Heavy melting steel is holding at $10.25 delivered in home territory. No. 1 cast scrap is less plentiful. Consumption is less and buying has eased correspondingly.

To Buy Piling for Dam

Cleveland, June 12.—The Mahoning Valley Sanitary district is closing shortly on about 300 tons of sheet piling for its Mineral Ridge dam.

D. M. Gurney, metallurgist, Warner & Swasey Co., has been elected chairman of the Cleveland chapter of the American Society for Steel Treating for the coming year. Other officers chosen were the following: Vice chairman, W. H. White, Cleveland manager, Atlas Steel Corp.; and secretary-treasurer, J. S. Ayling, sales manager, Case Hardening Service Co.

Talk Rates June 14

Pittsburgh, June 12.—A Pittsburgh committee, backed up by spokesmen for Cleveland, Buffalo, Youngstown, southern Ohio and Wheeling, W. Va., will go before eastern railroad executives at New York, June 14, in their effort to obtain lower rates on iron and steel products for shipment to the Pacific coast to meet the reduced rate of the Illinois Central to the coast. F. A. Ogden, Jones & Laughlin Steel Corp.; W. C. Guy, Carnegie Steel Co., and A. R. Kennedy, Pittsburgh Steel Co., are on the committee.

Arc welding will be employed in the assembly of 15 miles of steel columns into book shelves at the Sterling Memorial library now under construction at Yale university, New Haven, Conn.

Semifinished

Consumers Insisting on $1 Reduction, Because of Recent Cut in Basic Iron

THE recent sharp decline in the price of basic iron has led some users of semifinished steel to withhold specifications until granted a reduction of $1 a ton, and it is understood certain Ohio and West Virginia producers have acceded. Uncertainty in the sheet market with respect to third quarter is causing some buyers to hesitate in covering for sheet bars.

SEMIFINISHED STEEL PRICES, PAGE 1558

Pittsburgh, June 12.—Semifinished steel specifications have been adversely affected in some directions by the recent depression in the price of basic iron. Certain users are holding out for an adjustment downward amounting to at least $1 a ton. Some Ohio and West Virginia producers are understood to have granted the reduction, to obtain tonnage.

Most users are showing no haste to contract for third quarter. Business probably will be closed privately with regular sources of supply. So far as can be learned, nothing less than $33 has appeared on 4 x 4-inch rerolling billets or 8 x 2-inch slabs. A few spot sales of 100 tons or more at a time have been noted recently, and several at $38 for billets of forging quality were recorded last week. Sheet bar prices for the third quarter apparently are unchanged at $34, although no open market inquiries are reported. Skelp is inactive, but quotations are unchanged at 1.85c for second quarter and 1.90c for third quarter. Wire rods are $44, but only one or two carload sales are noted at that figure.

Chicago, June 12.—No decline is shown in production and shipments of semifinished material in this district. Most users are specifying fully against contracts. In one or two instances the price of $38 as a minimum for forging billets has been named but the market still is quoted by the leading producer at $39 to $43, according to grade. Rerolling billets 4 x 4-inch base, are $34, Chicago. Sheet bars are unchanged at $35. Fairly heavy demand is shown for sheet bars.

Philadelphia, June 12.—The market for wire rods now is $42 to $44, base, Pittsburgh. This is reflected by several recent transactions

Beryllium, one of the hardest and most inert of the light metals, is the subject discussed in Research Narrative No. 139, just published by the Engineering Foundation, 29 West Thirty-ninth street, New York.

Bars

Third Quarter Contracting Not Started as Mills Hold Prices Firmly—Demand Good

SPECIFICATIONS for bar mill products continue excellent and at Chicago have come to equal shipments. Prices are held firmly for third quarter though few mills are pushing contracting, and consumers are not anxious to buy, a deadlock resulting. Mill operations are somewhat lower. Eastern competition by water lines is being felt in the Chicago district.

BAR PRICES, PAGE 1557

Chicago, June 12.—Liberal specifications continue for bar mill products, and deliveries are three to four weeks ahead, according to size. While forward sales in plates and shapes have dropped off sharply in the past few weeks, bar sales have been less affected, although heavy specifications are eating into order books rapidly, and backlogs are being reduced. Automotive, farm equipment, cold finished and miscellaneous manufacturing consumers are busy but are in the market largely for material to cover nearby needs, giving little thought to acquiring stocks. Automotive parts and frame makers are at a high rate of operation. Sales quickly become specifications. Specifications in bars again are equal to shipping orders.

No definite announcement is forthcoming concerning third quarter prices for soft steel bars, but it is understood one producer will name 2.00c, Chicago, this week and will open books at once for that period. Many smaller consumers are paying higher than 2.00c since the card of extras put into effect on bars some months ago extracts penalties on small quantity orders. Eastern competition is felt in this district due as much to water competition in the North as to rail shipments. Another mixed cargo of pig iron and steel products from a lower lake mill has arrived.

The price of 1.90c, Chicago Heights, is definitely established for rail steel bars to the manufacturing trade. This represents an advance of $1 a ton over second quarter quotations. Bar iron is steady at 2.00c Railroad orders constitute the chief business and no backlogs are being accumulated.

New York, June 12.—Steel bar specifications of some mills show an improvement compared with the corresponding part of May, while in other quarters a decrease is reported. On the whole, the current volume of specifications does not reflect anxiety by consumers to lay in tonnage against second quarter contracts. However, it is considered likely that some increase in demand will be noted by the expiration of the quarter. So far, not much business has been placed 1.90c base, Pittsburgh.

Pittsburgh, June 12.—While merchant steel bar mills have made no progress in connection with third quarter contracting, all are confident that performances against second quarter contracts will be complete by the end of the month. They manifest no tendency whatever to depart from 1.90c for third quarter, although customers generally show no inclination to contract and are resisting that figure. Bar mill operations do not average much above 65 per cent, and in some cases are as low as 55 per cent. The market is quotable at 1.85c to 1.90c. Cold bar finishers maintain a more or less steady specifying rate, as do other large users, and scattered jobbers order freely to maintain well balanced stocks.

Youngstown, O., June 12.—Bar mill operations have gained in this district somewhat in the past week, especially among independents. This improvement has followed somewhat better demand from miscellaneous consuming lines as agricultural implement makers approach the end of their season. Some contracts are being booked for third quarter at 1.90c, Pittsburgh, though not many. Shipments continue to be made on second quarter contracts taken at 1.85c, Pittsburgh.

Cleveland, June 12.—Bar business continues to show a slightly downward tendency. Some makers have experienced a decided falling off but others have held well to the May rate. For the latter, automotive business has been the mainstay. Practically no third quarter contracts have been written, though makers say they will stand on 1.90c, Pittsburgh. Current business is at 1.85c, Pittsburgh or Cleveland mill.

Philadelphia, June 12.—Steel bar specifications are about equal to the May rate, which was below April. So far no contracts have been placed for third quarter. The current price continues 1.85c, base, Pittsburgh, while in some instances consumers continue to obtain tonnage against lower second quarter contracts.

Plates

Volume of New Business Subsiding—Neither Producers Nor Consumers Push Contracting

ACTIVITY in the plate market has simmered down to routine requirements. At Chicago orders from carbuilders have improved, but the volume of new business is diminishing. Eight 80,000-barrel tanks for erection in Texas have been awarded to a Pittsburgh district fabricator, these requiring 2500 tons of plates. Third quarter contracting is not yet under way.

PLATE PRICES, PAGE 1557

Pittsburgh, June 12.—Without much oil tankage, riveted pipe lines, gas holders, railroad cars or ships, plate fabricators' efforts are much hampered. Calls on them are confined to small tonnages, although the Riter-Conley Co. has just received an award involving eight 80,000-barrel tanks for Texas installation, taking 2500 tons of plates. Orders for floating equipment for use on the Allegheny, Ohio, Monongahela or Mississippi rivers seem to be confined to one or two units at a time, and a number of such contracts have just been awarded the Dravo Contracting Co. Mills report no interest in contracts for third quarter, on which they quote 1.90c, but expect that all tonnage on second quarter contracts will be taken out by June 30 since that figure is 1.85c.

Cleveland, June 12.—Demand for plates lags from all classes of users. The rise to 1.90c, Pittsburgh, for the third quarter has not appreciably stimulated specifications. Shipments are invoiced at 1.85c, Pittsburgh.

Chicago, June 12.—A spurt in mill orders from the car building shops during the week expanded the total of plate specifications. Order books are dwindling, as forward sales have dropped off. Plate mill operations for the district continue at 85 to 90 per cent. Less than 2000 tons of oil tankage is on inquiry, but boiler and tank manufacturers are active. Mills report a wider distribution of plates among manufacturing lines in the past several years. Deliveries are three to four weeks off, depending on size. One producer has indicated that the 2.00c price will be renamed for third quarter some time this week.

Philadelphia municipality is expected to ask for bids before the end of June on steel plate pipe line to involve from 7000 to 12,000 tons of plates.

CONTRACTS PLACED

2500 tons, eight 80,000-barrel tanks for southwestern Texas installation, to Riter-Conley

Co.
625 tons, eight locomotives and 18 tenders for Southern Pacific Equipment Co., San Francisco, to unnamed eastern mills.
500 tons, 50 caboose and 50 gondola cars, Southenr Pacific Equipment Co., San Francisco, to unnamed eastern mills.
270 tons, two snag barges, United States Engineers, Memphis, Tenn., to Dravo Contracting Co.
250 tons, two barges, Vang Construction Co., Pittsburgh, to Dravo Contracting Co.
220 tons, mat hull, United States Engineers, Vicksburg, Miss., to Riter-Conley Co.
125 tons, derrick barge, Merritt-Chapman-Scott Corp., New York, to Dravo Contracting Co.
Unstated tonnage, 100,000-gallon water tank for municipal water works, Kenosha, Wis., to Chicago Bridge & Iron Works.

CONTRACTS PENDING

175 tons, nine needle flats, United States Engineers, Louisville, Ky.; bids in.

Bolts, Nuts, Rivets

Booking for Third Quarter Starts at Former Level

NUT AND BOLT PRICES, PAGE 1558

Chicago, June 12.—Contracting in bolts and nuts for third quarter is well under way. Practically no price resistance has been encountered thus far. The price of 70 off for carriage and machine bolts represents the minimum quotation to larger users and does not take into consideration the small buyers, who are quoted 60 off. Small rivets are quoted 70 off to larger users. Large structural rivets in carload lots are quoted 3.00c, Chicago, and 2.90c, Pittsburgh and Cleveland.

Pittsburgh, June 12.—Important makers of nuts, bolts and rivets have started to negotiate for third quarter business at unchanged figures, namely 70 off on nuts and bolts for large buyers and 60 off for small; 70 and 10 off on small rivets, and 2.90c on large rivets. Specifications against second quarter contracts continue at a fair rate from scattered industries. These are sufficient to maintain average operations here of about 60 per cent. While railroads have not been extensive buyers of rivets, structural shops have been buying more normally and several attractive orders have been received during the past few days.

Chicago Steel Rate Falls to 87-88 Per Cent

Chicago, June 12.—Steelmaking operations in the Chicago district have been reduced to 87 to 88 per cent as a result of some contraction in open hearth furnace operation, and due to the fact that the leading interest has taken off a furnace at South Chicago. Twenty-seven of the 36 steelworks furnaces in the district are operating. The leading interest now has 19 of its 27 furnaces active, 11 at Gary, seven at South Chicago, and one at Joliet. Bar mill operations continue close to capacity, and plate mill capacity is 85 to 90 per cent engaged. Plain structural mills are practically at capacity. Rail mill operations in the Chicago district have dropped to 85 per cent.

Pipe

Pipe Jobber Orders Better but Line Pipe Inactive—Cast Buying Has Diminished

DEMAND for tubular products for distribution through jobbers has increased during the week, and orders from this source are better. Gas line development in the Pennsylvania district is hampered by surplus gas supplies. Cast iron pipe buying has diminished in the past week or two, few heavy inquiries being up. Cast pipe prices have weakened in the New York district.

PIPE PRICES, PAGE 1558, 1592

Pittsburgh, June 12.—Pipe jobbers, while depending upon mills to carry the stock burden, are enjoying a better turnover and their orders have been slightly more numerous on standard full weight merchant pipe. Most orders involve one or two carloads each. Casing orders from the Bradford, Pa., district where some drilling has been in progress have been slightly more numerous. Line pipe orders, however, are rare and it is probable that some of the projected gas lines now will be postponed indefinitely for the reason that the gas situation seems to be as bad as the oil. The mild winter created a surplus of gas and under these circumstances extensions will not be made. Pipe mill operations average 50 to 60 per cent.

Boston, June 12.—One of the best tonnages of pipe that has been booked in this district was closed within the past couple of days, when a prominent Massachusetts utility interest bought 2000 tons of 6 to 16-inch pipe, although the maker was not named. Prices show little change. On the 6 to 16-inch pipe just closed $40.50 to $42.50, delivered, was the ruling price. These prices hold delivered to common freight points in the Boston district. Above the 16-inch pipe some concessions still are made, although not so freely as a month or six weeks ago.

New York, June 12.—Dullness dominates cast pipe, with demand proving a disappointment to most sellers. Little is noted in municipal demand and private inquiry may be described at best as only spotty. Prices are weak, with some shading.

Cleveland, June 12.—Specifications for steel pipe from jobbers have improved, building demands having picked up during the past several weeks. Not much cast pipe tonnage has been placed in this territory recently, although some extensive expansion programs are planned.

Chicago, June 12.—Chicago waterworks department took bids yesterday on 1620 tons of 6 and 8-inch cast iron water pipe. Municipal tonnage has been disappointing this year because it came in spurts, with intervals of inactivity. Total sales in this territory are above last year but the buying has been less steady. This is true also in sales of pipe through contractors. A number of sales of contract pipe during the week were in lots of 2000 to 3000 tons. The price continues steady at $31 to $33, base Birmingham, for 6 to 24-inch. Most contract business is closed on the basis of $33.

Birmingham, Ala., June 12.—Unfilled tonnage of cast iron pressure pipe is being reduced steadily. Production is fairly steady although one of the larger shops has practically been laid off and output increased at others. Shipments are active but new lettings are not as active. Quotations are firm at $31 to $33 on 6-inch and over sizes.

Southern Natural Gas Corp., R. C. Sharp, Tulsa, Okla., president, plans to build a 900-mile pipe line from Monroe to Richland, La., and furnish natural gas in Louisiana, Mississippi, Alabama, Tennessee and Georgia.

CONTRACTS PLACED

2000 tons, 6 to 16-inch pipe, Massachusetts utility, to unstated maker.
887 tons, 10 to 14-inch class 150, Lovelock, Nev., through Holdener Construction Co., to unstated maker.
600 tons, 4 to 12-inch class B, improvement of Stewart street, Oceanside, Calif., to United Concrete Pipe & Construction Co.
150 tons, 6 to 16-inch pipe, Maynard, Mass., to Warren Foundry & Pipe Co.

CONTRACTS PENDING

2500 to 3000 tons, 6 to 16-inch cast pipe for Raritan township, New Jersey; W. J. Fritz & Co., East Orange, N. J., recently noted as low, have been awarded general contract.
1044 tons, 8 to 24-inch class C, Tacoma, Wash.; American Cast Iron Pipe Co. low bidder.
1620 tons, 6 to 8-inch pipe for Chicago; bids in.
500 tons, 6, 8 and 12-inch water pipe for department of water supply, gas and electricity, New York; general contractors' bids June 15.
400 tons, 4, 6 and 8-inch water pipe for the department of water supply, gas and electricity, New York; general contractors' bids June 19.
350 tons, 6 and 8-inch pipe for Fond du Lac, Wis.; bids in.
113 tons, 18-inch class B, harbor dredging work, Market street, San Diego; bids in June 25.
102 tons, 4 and 6-inch class B, improvement of Market street, San Diego; bids in June 25.
Unstated tonnage, comprising 60,000 feet of 4 to 16-inch gas pipe for an upstate New York private interest; specifications issued.

Officers of the New Haven chapter of the American Society for Steel Treating have been chosen as follows: Chairman, Harold Fish, secretary and treasurer, Ready Tool Co., Bridgeport, Conn.; vice chairman, Thomas H. Chamberlain, metallurgist, New Haven Clock Co., New Haven,

Conn.; secretary, Fred E. Stockwell, lubricating engineer, Standard Oil Co. of New York, New Haven, Conn.; and treasurer, Walter G. Aurand, metallurgist, R. Wallace & Sons Mfg. Co., Wallingford, Conn.

Valley Mill Operations Are Unchanged

Youngstown, O., June 12.—Mill operating schedules in the district are practically unchanged from last week, when operating rates in general ranged from 70 to 75 per cent both for the independents and for Steel corporation subsidiaries.

Out of 53 independent open hearths, 34 are melting this week, same as last. A total of 107 independent sheet units are active out of 127, while strip operations continue at capacity. Independent bar mill operations have improved somewhat to 60 per cent, with Carnegie Steel Co. still 75 per cent active. Tin plate activities of independents are around 55 per cent, and the Corporation subsidiary around 75 per cent. Somewhat slower production is reported from the tubular departments, with 12 units active out of 20 welded and seamless units.

Buying Foreign Spar

New York, June 12.—Eastern consumers of fluorspar have purchased heavily for shipment before Jan. 1. Most prices on guaranteed 85 and 5 per cent spar have been $16, net ton, duty paid tidewater, but on attractive business $15.85 has been done. Lower prices apparently are restricted to calcium fluoride and higher silica contents.

Tin Plate

Contracts Placed for Second Half—Canmakers Busy

TIN PLATE PRICES, PAGE 1557

New York, June 12.—Most second half tin plate requirements of consumers in the East have been placed under contract at prices which reflect no change from the first half. A number of contracts still are to be closed. Demand for tin plate for packers' cans is unusually large for this time of year, but in some other lines there has been a tendency for stocks to accumulate at the can making plants. The tin mill black plate market as a rule is 2.90c, base, Pittsburgh, although on certain business somewhat lower has been done.

Pittsburgh, June 12.—Specifications in tin plate are almost uninterrupted. Manufacturers of general line and packers' cans are busy making up stocks. Tin mill operations average 90 to 95 per cent. American Sheet & Tin Plate Co. continues on a 92 per cent basis. Price is unchanged at $5.25.

Only four companies in the United States make mechanical gas producers for general purposes.

Sheets

Continued Demand for Full Finished Is Active Feature of Market—Competition Is Keen

WHILE demand for full finished sheets is holding up fairly well, with the automotive industry active in the list of consumers, other lines show a recession. Mills in the Chicago district report an unbalanced situation, interfering with schedules. Operations in the Pittsburgh district have fallen off slightly, due to seasonal market influences.

SHEET PRICES, PAGE 1557

Youngstown, O., June 12.—Independent sheet mill activities in this district average 85 per cent, the same as last week. Shipments from mills continue to be urged by consumers, especially for autobody grades. Demand for autobody shows no sign of diminution, and these mills grow more confident of operating well into the summer at prevailing rates, which include turns partially completed on Sundays. The minimum price of black sheets is around 2.65c to 2.75c. Autobody sheets are strong at 4.00c. Blue annealed are 1.90c to 2.10c, and galvanized 3.65c to 3.75c, Pittsburgh. Few galvanized sheets are being produced in the valley, makers refusing to meet lower quotations offered by outside mills.

Buffalo, June 12.—Sheet mills here continue working at approximately 85 per cent, although unfilled tonnage is dropping slowly. Unless the late June sales improve this rate will not be maintained much longer. Prices are steady.

Pittsburgh, June 12.—Seasonal declines are noted in specifications for sheets. Mill operations average 70 to 80 per cent. The American Sheet & Tin Plate Co. lost a few points in the past week and is down to 75 per cent. Agricultural implement business is slackening. Automotive tonnage is on the down grade, with numerous companies purchasing only enough for requirements up to the time they will stop production on old models. Miscellaneous sheet users have bought mixed carloads. While 2.10c still applies occasionally on blue annealed sheet orders, a few buyers of attractive tonnages have uncovered 2.00c. Black is easily obtainable at 2.70c for prompt or future delivery. Galvanized sales have been recorded at 3.60c and even less than that is reported in some directions. Competition in the South is exceedingly keen but some of the lowest prices apply on thin sheets with thin coatings of spelter.

Philadelphia, June 12.—The sheet market here is featured by the placing of several contracts for third quarter at the prevailing prices. Otherwise demand is smaller than recently. Prices are unchanged.

Cleveland, June 12.—Specifications for steel sheets have eased off further in the past week, although sufficient tonnage is being booked to keep several mills running near capacity. No interest is being shown by buyers in third quarter coverage, the present price situation being decidedly unsettled. Black sheets are commonly quoted 2.75c, valley and Pittsburgh base, with galvanized sheets weak at 3.50c, valley. Autobody specifications have diminished from some builders but prices hold at 4.00c. First grade metal furniture stock is holding at 3.90c to 3.95c, but weakness in the black base is tending to unsettle the metal furniture quotations. Blue annealed continues to move at 2.00c, although sales are reported at 1.90c, with the 10-cent extra for over 40-inch width being waived.

Chicago, June 12.—Slightly more interest shown by some of the larger users of steel sheets indicates that more material may be ordered shortly against possible lower mill operations during the hot weather. No general tendency to build stocks is shown by consumers. Mills have three to four weeks' backlogs on blue annealed grades, but activity in black and galvanized is light. Mills complain of high overhead due to accumulation of orders in the heavier gages, with little tonnage in the lighter gages to assure smooth operations. The operating rate for the Chicago district continues at about 60 per cent. Mills believe prices have touched bottom. Chicago delivered prices are reported steady at 2.85c to 2.90c for No. 24 black; 3.75c to 3.80c for No. 24 galvanized; and 2.20c to 2.30c for No. 10 blue annealed. Mills are unwilling to open third quarter books at present prices.

St. Louis, June 12.—Further slight improvement is reported in demand for galvanized sheets, though new orders and specifications are disappointing. Price uncertainty is affecting sales of one pass cold-rolled and blue annealed sheets.

Building Employs More

Boston, June 12.—The number of building tradesmen employed in Massachusetts increased about 10 per cent in May over April, according to the report of 376 building contractors. The total number employed in this industry in May is rated at 8265, and in April 7450. The average weekly earnings per man increased from $35.85 in April to $37.65 in May.

Structural Shapes

Bridgework in New York District Continues Heavy—Market Lacked Large Awards and Inquiries During Week

BRIDGEWORK continues a heavy feature of the New York structural market. Although no large tonnages were placed nor brought out for figuring during the week, the market continues to hold the pace of the past several weeks, normal for the season. Prospective work, in architect's hands or in the financing stage, is heavier than usual, although the percentage materializing has not been high. The largest individual award of the week was 3600 tons for a court house in Denver.

Specifying against second quarter contracts was good during the week, and the threatened $1 increase of plain material prices for third quarter is expected to add incentive to take out all material covered. Fabricated and erected prices continue to sink to lower levels.

STRUCTURAL SHAPE PRICES, PAGE 1557

New York, June 12.—Bridgework features a rather inactive structural market. In fact, tonnage of this character has been one of the high lights of the market throughout the greater part of this year. Several lots ranging from 200 to 1000 tons are involved in the week's demand. Business, otherwise, is scattered and involves few large tonnages.

The local structural steel board of trade reports 46,002 tons as placed in the metropolitan district in May. This compares with 28,214 tons in the preceding month and is the best showing this year. The placing of 18,000 tons for the Lincoln building, noted last week, is believed to be largely responsible for this record. The figures are exclusive of bridges, subways, piers, etc.

Boston, June 12.—The labor situation remains in about the same position as a week ago. Sears, Roebuck building contractors have signed up with their workmen, to facilitate operations, but this is about the only job of any size that has taken such action. The 100 tons reported last week as awarded to the Palmer Steel Co. for a bridge at Stockbridge, Mass., went to Boston Bridge Works Inc. instead. Little more than 800 tons were awarded during the past week.

Philadelphia, June 12.—Structural demand is fair as a result of recent heavy structural lettings. Eastern mills are operating 60 to 75 per cent of capacity. Prices on plain material are unchanged.

Pittsburgh, June 12.—Shapes are in heaviest demand of the three heavy rolled steel products, according to mill interests. Specifications are heavy to close out second quarter contracts and for several weeks the drain has been steady. No progress has been made in connection with third quarter business on which for contracting purposes the mills are quoting 1.90c. Since June tonnage is being billed at 1.85c, the market is quoted at 1.85c to 1.90c. Awards are less numerous for this locality but inquiries during the past week or ten days have shown considerable life. While a week ago some estimating departments were almost out of work, these now are busy making up and filing bids. The largest inquiry pending is that for the Weirton Steel Co. improvement, taking 2000 tons or more.

Cleveland, June 12—Specifications for structural steel are spotty, the average being about equal to May. Specific construction jobs in this district are mostly small. Considerable tonnage will be required for grade elimination and bridgework for the Cleveland Terminal development. Estimates run as high as 10,000 tons for East Cleveland projects alone. Plain material prices are steady at 1.90c, Pittsburgh, for third quarter and 1.85c, for June delivery.

Chicago, June 12.—Heavy specifications for plain structural material in the past several months have run down order books and backlogs are becoming thin. Fabricating shops are well engaged as numerous smaller jobs have helped fill the programs of the smaller shops. The price of 2.00c, Chicago, is quoted on material bought by fabricators for stock, but it is admitted that the price is shaded to independent fabricators in cases of competition on specific jobs.

Awards Compared

	Tons
Awards this week	23,810
Awards last week	50,342
Awards two weeks ago	15,667
Awards this week in 1927	35,900
Average weekly awards, May	27,303
Average weekly awards, 1928	38,083
Total awards to date, 1927	838,234
Total awards to date, 1928	875,905

CONTRACTS PLACED

6,585 tons, involved in following awards:
Hilton building, Nassau and Fulton streets, New York, to Hedden Iron Construction Co.
Eighth unit, Fred F. French's Tudor City development, New York;
Roberts hall, Jerome avenue, New York; and
School No. 7, New York; all to Harris Structural Steel Co.
Talmud Torah building, Crown heights, Brooklyn;
St. Rosalias church, Sixty-fifth and Twelfth streets, Brooklyn; and
14-story building, 168 West Seventy-third street, New York, all to A. E. Norton Inc.
Warehouse, 153 East Eighty-seventh street, New York;
St. Paul Baptist church, 251 West 132nd street, New York; and
Loft, 977 Eighth street, New York, all to George A. Just Co.
Printing building, 308 East Forty-fifth street, New York; and
St. Joseph's college, Brooklyn, both to Levering & Garrigues Co.

3600 tons, court house, Denver, to unstated fabricator.

2700 tons, Rittenhouse Square apartment, Philadelphia, to Shoemaker Bridge Co. through United Engineers & Constructors Inc.

2000 tons, material for locomotives, tenders, gondola and caboose cars for Southern Pacific Equipment Co., San Francisco, to unstated eastern mills.

1000 tons, apartment, Sixty-fourth street and Lexington avenue, New York, to Hinkle Iron Co.

1000 tons, building for Argonaut Realty Co., Detroit, to Whitehead & Kales Co.

1000 tons, highway bridge, Maryland, to Maryland Steel Products Co.

975 tons, bridge over sanitary district canal, Chicago, to unstated fabricator.

890 tons, apartment, Fifteenth and Spruce streets, Philadelphia, to Easton Structural Steel Co.

585 tons, Harvard university law school addition, Cambridge, Mass., to New England Structural Co.

500 tons, St. Mary's seminary, Baltimore, to Dietrich Bros.

465 tons, highway bridge over Brazos river diversion channel, Freeport, Tex., to Orange Car & Steel Co., Orange, Tex.

400 tons, joists and standard shapes, Farmers Savings & Trust building, Mansfield, O., to Forest City Structural Steel Co.

400 tons, building for Southern New England Telephone Co., Stamford, Conn., to Bethlehem Fabricators Inc.

400 tons, cold storage building, Arlington, Va., to a Richmond, Va., fabricator.

325 tons, Reading Co. bridge alterations, Philadelphia, to Shoemaker Bridge Co.

300 tons, overpass for Kansas City Southern and Houston & Shreveport railroads at Shreveport, La., to Orange Car & Steel Co.

250 tons, school, Eighty-seventh avenue and Foothill boulevard, Oakland, Calif., to Herrick Iron Works.

230 tons, store building, Broadway and Diversey boulevard, Chicago, to Duffin Iron Co.

230 tons, state school, Polk, Pa., to American Bridge Co.

230 tons, underpass on Navigation boulevard, Houston, Tex., to Orange Car & Steel Co.

200 tons, state bridges, Vermont, to Berlin Construction Co.

200 tons, building for Madison and Sixty-second streets, New York, to Hinkle Iron Co.

200 tons, plant for Universal Blast Products Co., Parmaco, W. Va., to Austin Co.

175 tons, bridge arch centers, Allentown, Pa., to Bethlehem Steel Co.

175 tons, warehouse for Loblaw Grocerterias, 3617 South Ashland boulevard, Chicago, to Calumet Structural Iron Works.

160 tons, bridge, Portage, Wis., to Worden-Allen Co.

155 tons, mercantile building, North street, Boston, to New England Structural Co.

150 tons, highway bridges over Spring creek and Neches river, Texas, to Orange Car & Steel Co.

130 tons, Pennsylvania railroad bridges, Mulberry, Ill. and Windfall, Ind., to Bethlehem Steel Co.

100 tons, diocesan house, Joy street, Boston, to

Lehigh Structural Steel Co.

100 tons, bridge, Stockbridge, Mass., previously reported awarded to Palmer Steel Co., went to Boston Bridge Works Inc.

100 tons, Ohio Foundry Co. building, Cleveland, to Forest City Structural Steel Co.

Unstated tonnage, bridge approaches on Canadian side of Detroit-Windsor bridge, to Canadian Bridge Co.

CONTRACTS PENDING

8000 tons, store addition for Abraham & Straus, Brooklyn, N. Y.; bids soon.

7000 tons, apartment, Park avenue between Ninety-third and Ninety-fourth streets, New York; bids soon.

6000 tons, Harmon sports arena, Chicago.

3500 tons, power station, Duke, N. C.

3000 tons, apartment, Park avenue at Fifty-eighth street, New York; bids soon.

2500 tons, office building at 21-29 Union Square, New York; bids soon.

2000 tons, open-hearth extension for Weirton Steel Co., Weirton, W. Va.; bids close this week.

1500 tons, office for New American Casualty Co., John street, New York.

1000 tons, West Shore ferry, New York Central railroad, New York; project revived.

900 tons, Franklin academy, New York.

800 tons, apartment, Bellevue avenue, Oakland, Calif.; bids being received.

700 tons, building for Madison and Sixty-second street, New York.

600 tons, Drexel institute building, Philadelphia.

600 tons, school No. 81, Buffalo; bids in.

500 tons, building for Duke university, Durham, N. C.; a unit in an expansion program which to date involves 6000 to 7000 tons, and which will have still further requirements.

500 tons, Girard college buildings, Philadelphia.

470 tons, Umpqua river bridge, Scottsburg, Oreg., to Clackamas Construction Co.

400 tons, state highway bridges, New Jersey.

350 tons, Church of Our Lady of Miraculous Medal, Brooklyn, N. Y.

300 tons, building for duPont interests, Richmond, Va.

300 tons, approximate, Tammany Hall, Union Square, N. Y.

300 tons, approximate, Embassy theater, Atlantic City, N. J.

215 tons, dam, penstock and power house, Eugene, Oreg.; bids received.

125 tons, apartment, Ninth avenue and Judah street, San Francisco; bids being received.

100 to 150 tons, Hartner Electric Co. building, Cleveland.

Unstated tonnage, bridge over Beaver river between New Brighton and Beaver Falls, Pa., Pennsylvania railroad; War department approved plans June 10.

Ship Manganiferous Ore from Australia

New York, June 12.—Shipments of manganiferous ore now are being received steadily from Australia for consumption by eastern blast furnaces. This material averages around 50 per cent iron and 15 per cent manganese. It is being received in quantities governed by the amount of cargo space available.

Foreign iron ore offerings are scarce. Swedish ore, owing to the strike in Sweden, is not available, whereas North African mines are being called on to supply about 8,000,000 tons of ore annually to European blast furnaces in lieu of Swedish ore, as well as shipping the tonnage which they normally supply Europe. A number of small mines which under normal conditions have been idle have been put in operation to help make up the deficiency.

Concrete Bars

New Inquiry Well Maintained but Awards Mostly Are Small—Prices Steady

INQUIRIES for concrete reinforcing bars continue to be brought out in fair number, although many are small. Awards of the week were of average size, although a number of heavy tonnages are pending. General contract has been let on the 3500-ton New York dock project. Prices have been named for third quarter but little forward buying is being transacted.

REINFORCING BAR PRICES, PAGE 1557

Chicago, June 12.—Operations of reinforcing bar fabricators have increased in the past 30 days and now are around 85 per cent. Much current business has been in small-lot orders of 15 to 75 tons. Shipments are heavy for building work. Illinois road work is in full swing and contractors are getting heavy shipments. The minimum price for billet reinforcing bars is reported steady at 2.30c, while 3.00c is obtained for lots of 5 tons and less. Rail steel bars for building are 2.00c for 18 tons and over, and up to 2.60c for small lots. Rail steel bars for road and bridge work are quoted at 1.85c to 1.95c, Chicago Heights.

Buffalo, June 12.—New inquiry for reinforcing bars listed this week totals 1000 tons. Heavy specifications are reported on orders for mesh for road work, and steelworks with such departments are operating them at capacity. Reinforcing bar and mesh prices are steady.

Pittsburgh, June 12.—While inquiries seem plentiful for reinforcing concrete bars, awards are scarce. Entirely typical is the award of two derricks at Akron and Cleveland to the Truscon Steel Co., taking only 10 tons. An inquiry is out from Bloomsburg, Pa., for 200 to 300 tons for two buildings for the Columbia Fair association. Concrete bar prices are quoted at 1.85c to 1.90c, the latter for third quarter shipment, although no contracts have yet been booked for that period.

Cleveland, June 12.—The only heavy tonnage pending in the concrete bar market here is the Terminal superstructure, taking 1800 tons, for which Aronberg-Fried Co., New York, has the general contract. Decision is expected this week whether the contractor will sublet the reinforcing or do the work itself. Small lots continue fairly numerous but inquiries are light. New billet bar prices are 1.85c to 1.90c, Cleveland or Pittsburgh mill, the latter being quoted for third quarter delivery. Rail steel holds at 1.75c, mill.

Awards Compared

	Tons
Awards this week	4,627
Awards last week	6,474
Awards two weeks ago	3,860
Awards this week in 1927	8,780
Average weekly awards, May	6,411
Average weekly awards, 1928	7,458
Total awards to date, 1927	129,875
Total awards to date, 1928	171,543

CONTRACTS PLACED

800 tons, Hoffberger warehouse, Baltimore, to Dietrich Bros.

700 tons, building for Cuneo Printing Co., Chicago, to Truscon Steel Co.

450 tons, Hyde Park State bank, Chicago, to unstated fabricator.

400 tons, mesh, road work for Connecticut, 250 tons to Concrete Steel Co. 150 tons to American Steel & Wire Co.

350 tons, state road, Deans, N. J., to Cranbury turnpike, to Igoe Bros., through Ross & Taylor, contractors.

300 tons, building for Villa Nova college, Villa Nova, Pa., previously reported awarded Penn Steel Service Co., went to A. Taylor Co.

250 tons, roadwork at Linden, N. J., and Union, N. J., to Igoe Bros., through C. H. Winans Co., contractor.

225 tons, testing laboratory and addition to Lincoln hall, University of Illinois, Urbana, Ill., to Truscon Steel Co.

175 tons, Lowell apartments, Eighth and Spring streets, Seattle, to Pacific Const Steel Co.

160 tons, school No. 81, Buffalo, to Kalman Steel Co.

155 tons, garage, Sacramento and Davis streets, San Diego, Calif., to unnamed interest.

125 tons, bakery building, New York, to Truscon Steel Co., through the contractor, James Baird & Co.

115 tons, Russell street bridge, Baltimore, to McClintic-Marshall Co.

110 tons, Fenton Cold Storage building, Philadelphia, to American Steel Engineering Co.

110 tons, Great Lakes Portland Cement Co. addition, Buffalo, to Kalman Steel Co.

102 tons, dam for United States bureau of reclamation, Vale, Oreg., to unnamed interest.

100 tons, discharge tunnel for Lynn Gas & Electric Co., Lynn, Mass., to McClintic-Marshall Co., through the contractor, Merritt-Chapman & Scott Corp.

100 tons, viaduct and reservoir, Waukegan, Ill., to American System of Reinforcing.

100 tons, exchange for Illinois Bell Telephone Co., Chicago, to Jones & Laughlin Steel Corp.

100 tons, piling work on new J. C. Penny Co. building at St. Louis, to Laclede Steel Co.

CONTRACTS PENDING

3500 tons, New York Dock Co., building, New York; general contract to White Construction Co.

600 tons, Cazenovia ridge, Buffalo; bids in.

525 tons, dam, penstock and power house, Eugene, Oreg.; bids received.
300 tons, Carborundum Co. addition, Niagara Falls, N. Y.; bids in.
200 tons, garage in Detroit; general contract to H. K. Ferguson Co., Cleveland.
200 to 300 tons, exhibition hall and poultry building, Columbia County Fair association, Pennsylvania, Harry B. Cowell, secretary, Bloomsburg, Pa.; bids being taken.
200 tons, building for Conde Nast Publishing Co., Greenwich, Conn.; general contract to Marcello Mezzula, Port Chester, N. Y.
175 tons, paving in Port Chester, N. Y.; contract to Petro Luciano & Sons, White Plains, N. Y.
125 tons, paving at Larchmont, N. Y.; contract to Patterson Rissi Co., Torrington, Conn.
125 tons, new bank building, Quincy, Mass.; general contract to E. A. Tucker & Co.
Unstated tonnage, dam, Mineral Ridge, O.
Unstated tonnage, paving at Yonkers, N. Y.; low bidders Antonia Cianculli, Yonkers, and Smith Bros. Contracting Co., Pelham, N. Y.

Unfilled Tonnage Less

Unfilled bookings of the United States Steel Corp., as of May 31 again declined, aggregating 3,416,822 tons. This is a reduction of 11.7 per cent or 455,311 tons. The present total is the lowest since Oct. 31, 1927. Comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
May 31, 1928	3,416,822	455,311—	11.7	—
Apr. 30, 1928	3,872,133	463,073—	10.7	—
Mar. 31, 1928	4,335,206	62,983—	1.43	—
Feb. 29, 1928	4,398,189	122,242+	2.8	+
Jan. 31, 1928	4,275,947	303,073+	7.62	+
Dec. 31, 1927	3,972,874	518,430+	15.	+
Nov. 30, 1927	3,454,444	113,404+	3.39	+
Oct. 31, 1927	3,341,040	192,921+	6.1	+
Sept. 30, 1927	3,148,113	47,924—	1.49	—
Aug. 31, 1927	3,196,037	54,023+	1.7	+
July 31, 1927	3,142,014	88,768+	2.8	+
June 30, 1927	3,053,246	2,305+	0.075	+
May 31, 1927	3,050,941	405,191—	11.7	—
Apr. 30, 1927	3,456,132	97,008—	2.72	—
Mar. 31, 1927	3,553,140	43,979—	1.22	—
Feb. 28, 1927	3,597,119	203,058—	5.34	—
Jan. 31, 1927	3,800,177	160,792—	4.5	—
Dec. 31, 1926	3,960,969	153,522+	4.1	+
Nov. 30, 1926	3,807,447	123,786+	3.36	+
Oct. 31, 1926	3,683,661	90,152+	2.50	+
Sept. 30, 1926	3,593.509	51,174+	1.42	+
Aug. 31, 1926	3,542,335	60,187—	1.67	—
July 31, 1926	3,602,652	124,010+	3.56	+
June 30, 1926	3,478,642	170,608—	4.41	—
May 31, 1926	3,649,250	218,726—	5.91	—
Apr. 30, 1926	3,867,976	511,959—	13.9	—
Mar. 31, 1926	4,379,935	236,887—	5.13	—
Feb. 28, 1926	4,616,822	265,917—	5.7	—
Jan. 31, 1926	4,882,739	150,625—	3.0	—
Dec. 31, 1925	5,033,364	451,584+	9.8	+

Buys Controlling Stock

Pittsburgh, June 12.—Jones & Laughlin Steel Corp. is understood to have acquired a majority of the common stock of the Frick-Reed Supply Corp., formed by a merger of Frick & Lindsay Co. and Frick-Reid Supply Co. The two companies operate 45 stores, distributing equipment in various oil fields.

Iron Ore Imports Heavy

Philadelphia, June 12.—Iron ore imports in the week ending June 9 were unusually heavy at this port. They included 13,750 tons from Algeria and 253 tons from Spain. From Portuguese Africa 2000 tons of chrome ore was received, while manganese imports included 5010 tons from British West Africa and 100 tons from the United Kingdom.

During a 24-hour run at the Ford Motor Co., Fordson, Mich., 200,000 flash and 3,000,000 spot and projection welds are made.

Rails, Cars

Western Roads Place 11,000 Tons of Rails—Track Material More Active

ACTIVITY in the railroad market of the week included purchase of about 11,000 tons of rails by western roads and the inquiry of Seaboard Air Line for 1000 box cars. Track accessories are more active, the Pennsylvania inquiry heading the current list. May freight car awards of 2271 were the smallest of the year, the five month total being 24,614.

RAILROAD TRACK PRICES, PAGE 1558

New York, June 12.—An inquiry from the Seaboard Air Line for 1000 box cars features an otherwise listless car market here. Locomotive demand also is dull.

Complete returns for May indicate the placing of 2271 freight cars for domestic account. This is the smallest monthly total so far this year and brings the aggregate for the first five months up to 24,614. Further comparisons follow:

	1928	1927	1926	1925
Jan.	3,900	14,710	8,830	1,695
Feb.	9,962	5,960	12,895	5,510
March	2,698	4,955	8,895	4,730
April	5,783	3,675	4,615	5,060
May	2,271	5,425	4,448	6,985
Total (5 mos.)	24,614	34,725	39,683	23,980
June		7,440	4,285	1,835
July		2,295	1,265	800
Aug.		1,181	152	2,875
Sept.		682	3,335	7,905
Oct.		886	2,840	11,145
Nov.		1,189	3,925	11,685
Dec.		14,897	8,990	16,885
Total		64,042	60,575	77,110

The Erie railroad is inquiring for 3000 kegs of track spikes. Orders for substantial quantities of track spikes just have been distributed by the New York Central railroad.

Pittsburgh, June 12.—Other railroads have not followed the lead of the Pennsylvania, which as noted last week issued a large inquiry for tie plates, spikes, etc. Bids on this inquiry, involving 9000 kegs of spikes and 330,000 tie plates, will be closed by June 15. Leading producers here manage to keep their average operations at 60 per cent. They expect to continue on that basis for two months.

Standard rail mills have come practically to an end of their business and while there are some reports of extensive tonnage planned for release subsequent to July 1, nothing definite has appeared. Light rail orders involving single carloads, or 50 to 100 tons each, continue to be placed at $36. Rerollers ask $34.

Chicago, June 12.—About 11,000 tons of rails has been booked by western mills during the week, including 5000 tons for two western roads and more than 4000 tons for shipment later in the season. Rail mill operations for the district now are about 85 per cent, representing a drop of about 5 per cent since June 1.

Several miscellaneous orders for track fastenings are reported, totaling 2000 to 3000 tons. Fair inquiry is in sight, including that of the Pennsylvania railroad fastenings. Specifications continue active, and usually rush shipments for track accessory material is asked. Departments engaged in track fastenings output are fully engaged on some products and only partly at capacity on others. Tie plates are steady at $43.

It is understood that a number of western railroads will order rolling stock equipment this year. Nothing definite has been heard from the Illinois Central but some reports are that this road will have a large order ready for consideration within 60 days. A number of the carriers are building or repairing rolling equipment in their own shops. Freight cars ordered by Western roads this year are below the 1927 volume, but passenger car orders are approximately the same as last.

Philadelphia, June 12.—Pennsylvania railroad is inquiring for 94,500 pairs of angle bars, 330,000 tie plates, 1,800,000 track spikes, and 342,000 track bolts. The Pennsylvania ordered a considerable tonnage of frogs, switches, and similar equipment.

CAR ORDERS PLACED

Milcroft Coal Co., 15 mine cars, to Western Gas Construction Co.
Missouri Pacific, 200 automobile cars, to DeSoto, Mo., shops of the railroad.
Southern Pacific, ten street cars, to St. Louis Car Co.

LOCOMOTIVE ORDERS PLACED

Aluminum Co. of America, two switch engines, to American Locomotive Co.
Missouri Pacific railroad, five locomotives, to American Locomotive Co.

CAR ORDERS PENDING

Canadian National, three baggage and mail cars.
Chicago, Rock Island & Pacific, 250 composite gondola car bodies.
Illinois Central, two air dump cars.
Missouri-Kansas-Texas, 10 air dump cars in addition to six baggage-mail cars previously noted.
Montevideo, Uruguay, port administration, 20 freight cars.
New York, Chicago & St. Louis, one business car.
Pittsburgh & Shawmut, six caboose cars.
Seaboard Air Line, 1000 box cars.
Union Pacific, four gasoline-electric rail motor cars and eight trailer cars.
United States navy, one tank car.

LOCOMOTIVE ORDERS PENDING

Chicago & Illinois Midland, two locomotives.
Utah Copper, Co., 20 to 40 electric locomotives.

Wire

Small Demand Causes Mills to Restrict Operations—Manufacturers Buying Well

MANUFACTURERS of wire and wire products are doing much less business, in some instances only half that of a year ago. Plants are operating at 35 to 40 per cent at Pittsburgh. Jobbers have heavy nail stocks with light demand. Prices are being held well, with some shading by smaller producers. Some third quarter tonnage has been sold.

WIRE PRICES, PAGE 1558

Worcester, Mass., June 12.—Demand for plain steel wire and wire products reflects a seasonal lull, although business is developing in limited lots to indicate that heavy shipments taken early last quarter are working into consumption satisfactorily. Plain wire continues firm at 2.65c, Worcester, and appears better established at that figure with less talk of concessions. There is little third quarter business, but indications are that stocks during the third quarter and final half of the year will be smaller than for some time. Demand for specialties continues fairly steady and wire goods are holding up well. Manufacturers' wire is being taken in fair-sized volume, but in limited lots.

New York, June 12.—There is more booking of wire nail business at $2.55, base, Pittsburgh, but $2.65 continues to be done on a large percentage of tonnage, so that the current market may be quoted at $2.55 to $2.65. Wire continues firm at 2.50c, base, Pittsburgh.

Pittsburgh, June 12.—Wire and wire products manufacturers are doing only about half what they were accomplishing a year ago. Operations are about 40 per cent, some plants being down to 35 per cent. Some have booked their customers for third quarter in every case so far the $2.65 nail base has applied. A few spot market sales at that figure have been made and some manufacturers' wire has been sold for third quarter at 2.50c base. Due to seasonal influences, the selling of barbed wire is heavier than woven wire fencing.

Cleveland, June 12.—Books have been opened on third quarter nail and wire business by several makers reaffirming second quarter quotations of 2.50c, Cleveland, for plain wire, and $2.65 per 100-pound keg of wire nails. Specifications have been fair recently from the automotive industry for wire, but nails have been hampered somewhat by weather unsuitable for outdoor work. Shading of spot prices to $2.60 on nails continues in southern Ohio.

Chicago, June 12.—Sales of wire to the manufacturing trades make the most active feature in the Western market. Jobbing is on a slower scale. Woven wire fencing and barbed wire continue at a fairly steady pace. All consumers are ordering piecemeal. The turnover in nails has been small and jobbers' stocks are heavy with demand light. Nails are quoted at $2.60 to $2.70, Chicago or western mills. Power concessions below $2.60 are reported. Bright plain wire is quoted generally at 2.55c, although 2.50c was named recently at several points.

Cold Finished Steel

Third Quarter Tonnage To Go At Unchanged Prices

COLD FINISHED PRICES, PAGE 1557

Pittsburgh, June 12.—Without any particular requests for third quarter coverage, cold finished interests continue to mark time, although it is becoming evident they do not intend to ask more than 2.20c for third quarter deliveries despite the announced intention of the hot merchant bar makers to ask 1.90c. Specifications are running about the same as last week, but shipments this month are below those of May by a small margin. Automotive business slackened a trifle although it has kept up better this month than was expected, due to the fact some interests already have begun on their new models. Business of this character will increase. Operations average 60 to 70 per cent.

Cleveland, June 12.—Demand for cold drawn bars is maintaining the level of May. Agricultural equipment and roadbuilding machinery manufacturers are not taking much tonnage, having almost completed production for 1928 delivery. Automotive consumers continue fair buyers, although mid-year inventories are beginning to effect some departmental operations. Prices have been reaffirmed for third quarter at 2.20c, Pittsburgh, and 2.25c, Cleveland, although consumers show little interest in contracting ahead.

Offices and plant of the Baldwin Locomotive Works at Broad and Spring Garden streets, Philadelphia, will be officially closed June 28. Headquarters thereafter will be in the new administration building at Eddystone, Pa.

Strip

Smaller Demand From Automotive Users Causes Shrinkage in Tonnage—Some Shading Seen

THIRD quarter contracts have been made quietly by hot and cold strip makers. Production has fallen off slightly as automotive users are taking less. General requirements make up in some measure for this lack. Inquiries to test the market are slow to appear and some quotations have been made below the general level. Miscellaneous requirements for strip are fair.

STRIP PRICES, PAGE 1558

Pittsburgh, June 12.—Hot and cold strip makers have been quietly renewing their customers' requirements for third quarter. One plant which has been operating at about 90 per cent expects to realize 10 per cent below that for June. Others are operating at 75 to 80 per cent. Automotive tonnage is showing a tendency to shrink in some directions but holds up fairly well in a few instances. Miscellaneous consuming lines, however, are making up for automotive lack. Makers here are observing a 1.90c minimum on hot and are quoting 3.00c to 3.15c on cold. Narrow hot flats are 2.10c.

New York, June 12.—Demand for hot strip steel continues fair as far as tonnage is concerned, but there is a lack of new inquiries to test the market and most requirements are being specified against second quarter contracts. Hot strip under 3 inches wide ranges from 2.20c to 2.40c base Pittsburgh, 3 to 6 inches wide from 2.10c to 2.20c, and 6 to 12 inches wide from 1.90c to 2.00c, but the minimum prices have been shaded occasionally, and the market is not clearly defined.

Cleveland, June 12.—Demand for strip steel has fallen off considerably in the past week, especially in the wide widths. Mills producing hot strip 6-inch and narrower continue to have fair operating books, several quoting two and three weeks' delivery. Some fair business in small tonnages is coming from the general manufacturing trade but the large tonnage buyers in the automotive field are reducing releases. Hot strip, 6 to 12-inch widths, continues quotable at 1.75c, Pittsburgh. Cold strip is inactive, being quoted 2.75c, Cleveland, for 3 tons or more of a size.

Nonferrous Metals

Prices Hold Fairly Steady Despite Light Buying—Heavy Shipments on Old Orders —Export Demand For Copper Feature

Prices of the Week, Cents a Pound

	Copper			Straits Tin							
	Electro delivered	Lake delivered	Casting refinery	New York Spot	Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
June 6	14.75	14.82½	14.50	49.37½	49.50	6.30	6.17½	6.15	23.90	10.37½	35.00
June 7	14.75	14.82½	14.50	49.75	49.87½	6.30	6.17½	6.15	23.90	10.25	35.00
June 8	14.75	14.82½	14.50	49.00	49.00	6.30	6.15	6.15	23.90	10.25	35.00
June 11	14.75	14.82½	14.50	49.00	49.00	6.30	6.15	6.15	23.90	10.00	35.00
June 12	14.75	14.82½	14.50	48.75	48.75	6.30	6.15	6.15	23.90	9.75	35.00

NEW YORK, June 12.—Prices of nonferrous metals have held fairly steady during the past week with light buying but good shipments. Export demand for copper was an exception, continuing large. Lead was moderately active, mostly for early shipment. Tin was active on some days and quiet on others, and fell to a new low price.

Copper—Copper and its products held unchanged on the basis of 14.75c, Connecticut. Buying was light in the domestic market. Secondary copper products and scrap continued strong, with casting and brass ingot prices going up after the latter had been slow to respond.

Mills pressed copper producers to ship their June copper the first week of the month, but the large shipment of the past few months had eaten up stocks, so that current deliveries have to be made out of production. Almost no June copper and little July shipment of electrolytic can be had on new purchases from any source. On the other hand, users are well covered for these months. A little early shipment copper sold at small premiums. Some producers have sold a fair amount of August shipment metal.

Tin—Buying of tin by consumers has continued light except on one or two active days. Meanwhile, stocks here continue of good size and Singapore is selling straights tin freely. All indications are that output will continue indefinitely at the present high rate, but consumption probably is nearing the end of its largest season for this year. Consumption is not much behind production but the important fact in the market is that emphasis is on supply whereas a few years ago it was on demand. Large supplies and lack of any certainty on the part of traders as to how the market will move have caused all positions to sell at about the same price level lately. A good many traders think that the market may go a little lower but on the other hand the price has had a large decline, not only this year but from the high prices of recent years. The market is about 8 cents lower than a year ago.

Zinc—Prime western is remarkably firm at 6.15c, East St. Louis, although buying has been only of modest size. Back of this situation is a firm ore market. Moreover there is a general certainty among the producers that galvanizers have unusually low stocks and will be forced into the market soon. Shipments during May were the largest on record for that month but as output topped the movement stocks gained slightly.

Lead—Lead has been active lately, though buying the past few days has not been quite so large. Prices have been steady, though the East St. Louis price is not quite so strong as a week ago, but as the differential between New York and St. Louis still is only 15 points, it could not be said that the situation is particularly weak.

Aluminum—Not much new business has been done lately but prices are steady to firm throughout the list. Shipments are of good size. The remelt situation appears to be the only disturbing factor in the market at present.—*Daily Metal Trade.*

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	19.25
Copper, hot rolled	23.50
Lead, full sheets (cut ¼c more)	10.00
Zinc (100-pound base)	9.25
Aluminum, flat sheets, up to 10 gage, 8" to 72" wide	31.30
SEAMLESS TUBES	
Yellow brass (high)	24.12½
Copper	25.00
RODS	
Yellow brass (high, full turning)	17.00
Naval brass	19.75
WIRE	
Copper, car lots	16.37½
Yellow brass (high)	19.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.50 to 9.75
Chicago	9.50 to 10.00
Cleveland	10.00 to 10.25
HEAVY YELLOW BRASS	
Chicago	7.00 to 7.25
Cleveland	7.50 to 7.75
ZINC	
New York	3.50
Cleveland	3.25
HEAVY COPPER AND WIRE	
New York	12.25
Boston	11.75 to 12.25
Chicago	11.50 to 11.75
Cleveland	11.75
RED BRASS BORINGS	
New York	8.50 to 9.00
YELLOW BRASS TUBING	
Cleveland	7.50 to 7.75
LIGHT COPPER	
New York	10.75
Chicago	9.50 to 9.75
Cleveland	10.50
LIGHT BRASS	
Boston	5.75 to 6.00
Chicago	6.75 to 7.00
Cleveland	5.50
ALUMINUM	
Clippings, Cleveland	17.00
Borings, Cleveland	8.00
Cast, Cleveland	12.00
Cast, Boston	10.50 to 11.00

Secondary Metals

Remelt Aluminum No. 12	16.50 to 17.00
Brass ingot, 85-5-5-5	12.50 to 12.75

Coke By-Products

Benzol and Toluol Brisk But Sulphate Lags—Prices Are Unchanged

New York, June 12.—Benzol prices continue buoyant, with demand good and a stronger market in gasoline. Some sellers look for an early advance. Toluol also is unchanged. Demand, however, is heavy, with little or no spot material available. Commercial xylol and solvent naphtha are moving moderately.

Sellers of naphthalene report brisk buying by the drug trade. Recently a slowing up was reported by some leading sellers. Prices on flakes and balls are steady.

Sulphate of ammonia is quiet. It is now off season for domestic purchasers, and over the past week or so there has been a negligible amount of export buying. Meanwhile, prices are nominally unchanged at $2.20, delivered, for domestic consumption and $2.20 to $2.25, port, for material in double bags for export shipment.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.22	.....
90 per cent benzol	0.22	.....
Toluol	0.35	.....
Solvent naphtha	0.30	.....
Commercial xylol	0.30	.....
Phenol	0.17	.....

Per Pound at Producers' Plants

Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.20

Quicksilver Quiet, Weaker

New York, June 12.—Quicksilver is quiet at $123 to $124.50 a flask, a little under recent prices.

Warehouse

Spotty Conditions More Pronounced in Market with General Trend Still Favorable—Prices Weaken on Sheets Others Hold Firm

SALES from iron and steel warehouses are spottier. New York reports first signs of mid-summer dullness, while middle western cities reflect continued good automotive and building demand. Prices generally are holding steady with the exception of sheets, mill weakness being reflected in a general shading out of stock.

Boston warehouses have been enjoying a fairly good line of business, but prices are weak, a direct reflection of the competition in foreign steel. June demand is holding well, especially in specialties, as well as machinery and small tools. Galvanized sheets are also moving as well as expected. The outlook is for a fair summer with improvement in the last half of the year.

Warehouse sales at Buffalo have been of satisfactory character the first ten days of June. Volume of business is equal to that established during the last half of May with individual orders showing some enlargement. Building materials are among best sellers. The reduction in galvanized sheet prices to quantity buyers has helped sales of this material.

Seasonal dullness is more evident in New York metropolitan warehouse district. A fair volume of business is being transacted, but the tendency temporarily at least appears downward. Prices are showing little change, with further weakness at the sheet mills exerting a depressing effect, nevertheless, on black and galvanized sheets.

St. Louis weather conditions continue unfavorable for distribution of goods from stock. This is true particularly of materials for the rural areas, spring crops being universally backward. Some improvement in demand for building materials has developed. At the moment the best call is for materials for municipal, river and public utility work. Price uncertainty is adversely affecting new business on sheets of some descriptions, though since June 1 specifications on all sheets, other than galvanized, have exhibited more life.

Cincinnati warehouse prices are holding fairly well but movement out of stock in this territory has slowed down. Sheets are moving fairly well again

Demand for building materials from Cleveland warehouses has increased in the past few days, aided by warm and dry weather. Buying of cold-drawn bars from warehouses, to fill out manufacturing schedules, has continued un-

(*Concluded on Page* 1573)

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York† ††	3.20c to 3.25c
Philadelphia*	2.60c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York†	2.80c to 3.24c
Philadelphia*	2.60c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles lcl.	3.00c
New York	2.95c to 3.10c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.75c to 3.175c
San Francisco cl.	2.85c
San Francisco lcl.	3.10c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.30c
New York†	3.25c to 3.30c
Philadelphia	2.40c to 2.80c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York†	3.25c to 3.30c
New York† (floor)	5.05c to 5.10c
Philadelphia	2.40c to 2.80c
Phila., 3/16-in.	2.60c to 3.00c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED

Baltimore	3.45c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago, to 40 in.	3.50c
Chicago, over 40 in.	3.60c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.50c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	4.00c
New York	3.90c
Portland	4.00c
Philadelphia*†	3.15c
Pittsburgh**	3.00c to 3.10c
San Francisco	3.75c
Seattle	4.00c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.20c to 4.56c

No. 24 BLACK SHEETS

Baltimore	3.30c to 4.00c
Boston	5.00c
Buffalo	4.20c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	3.80c
Philadelphia*†	4.00c
Pittsburgh‡	3.65c
Portland	4.90c
San Francisco	4.95c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.95c
Tulsa	4.75c

No. 24 GALVANIZED SHEETS

Baltimore	4.15c to 4.75c
Boston	5.85c
Buffalo	4.70c to 5.05c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.50c
Detroit	4.90c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York	4.50c
Philadelphia*†	4.75c
Pittsburgh‡	4.40c to 4.50c
Portland	5.65c
San Francisco	5.50c
Seattle	5.75c
St. Louis	5.10c
St. Paul	4.90c
Tulsa	5.55c

BANDS

Baltimore	3.85c
Boston	4.015c to 5.00c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.15c
New York†	4.00c
Philadelphia*	3.25c
Pittsburgh	3.60c
Portland	4.00c
San Francisco	4.00c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York†	4.50c
Philadelphia*	3.50c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons,	Flats, squares
Baltimore	3.35c	3.85c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.40c	3.90c
Philadelphia*	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland (a)	5.00c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.66c	5.16c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.00c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	14.00c
Iron bars, rounds	6.25c
Flats and Squares	
Baltimore, New York, Phila.	6.60c

*Plus quantity differentials. †Minus quantity differentials. ††Domestic bars. ‡10 to 24 bundles. **25 or more sheets. *†50 or more bundles.

Pacific Coast

Car Building Takes Best Shape and Plate Tonnage—Lower Rail-Water Rates

CAR building in its own shops by the Southern Pacific railroad caused the largest award of the week in the San Francisco district, 3125 tons of shapes and plates. Building construction continues to make up much tonnage at Seattle. A Portland contractor has been awarded the tunnel at Detroit. Lower water rates promise reduced prices.

San Francisco, June 9.—(By Air Mail)—Among developments of a general quiet week in the iron and steel market was placing of about 2000 tons of structural shapes and 1125 tons of plates by the Southern Pacific Equipment Co., San Francisco, with eastern mills, for the construction, at their Sacramento shops, of 50 gondolas, 50 caboose cars, 18 locomotive tenders and 8 locomotives. Low prices, both in plain material and finished products, rather than lack of volume appears to be the biggest complaint of consumers and producers.

Pig Iron and Coke

The market for foundry pig iron and coke continues more or less inactive and large inquiries and sales are rare. Reports from the southern part of California show little improvement in the rate of operations among foundries producing oilfield equipment. Quotations continue unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00
*Dutch	24.50

*C.i.f. duty paid.

Bars, Plates and Shapes

Awards of concrete bars fell off considerably during the past week, less than 500 tons being reported placed. To date this year bookings aggregate 47,094 tons, compared with 23,801 tons for the corresponding period in 1927. The largest award involved 155 tons for a garage in San Francisco. A drainage improvement district project in Los Angeles will shortly come up for figures and will require close to 2400 tons. Bids were opened this week at Eugene, Oreg., for 525 tons for a power house, dam and penstock. Little improvement is noted in the warehouse price situation in the bay district and better than 2.00c continues to be named from time to time.

Plate bookings were confined to one project and involved 1125 tons for the Southern Pacific Equipment Co. This is the largest plate award since early in March. Awards so far this year total 15,291 tons, compared with 44,972 tons for the same period a year ago. Pending business is confined to small lots with two exceptions. Bids are in on a 700-ton carfloat for the Santa Fe and a similar one for the Western Pacific. On the usual run of the market 2.30c continues to apply but any desirable business would bring at least 2.25c.

Awards of shape material this week were considerably lighter than for the previous week, less than 3600 tons being booked. The total for the year is now 70,539 tons, compared with 76,899 tons for the corresponding period in 1927. Large lettings included 2000 tons for the Southern Pacific Equipment Co., placed with unnamed eastern mills, 578 tons for the Queets River bridge in Washington, booked by the Virginia Bridge & Iron Co. and 250 tons for a school in Oakland taken by the Herrick Iron Works. Pending business exceeds 13,000 tons and new inquiries of the week call for 800 tons for an apartment in Oakland and 125 tons for an apartment in San Francisco. Plain material is firm at 2.35c, c.i.f., coast ports.

Other Finished Material

Awards of cast iron pipe this week were the heaviest in over five weeks, 1741 tons being booked. This brings the aggregate for the year to 38,151 tons, compared with 46,328 tons for the same period last year. Lovelock, Nev., and Oceanside, Calif., placed 887 tons and 600 tons respectively with unnamed makers. Pending business is not heavy, less than 3500 tons being up for figures. Movement of standard pipe and oil country goods remains exceptionally quiet and no large inquiries or sales were reported.

MUCH PENDING AT SEATTLE

Seattle, June 6.—No large awards for iron or steel have been announced this week but several jobs are pending. Local steel mills and fabricating plants report a fair volume of business, most of it ranging from 20 to 75 tons.

Interest is manifested in announcement by two Gulf steamship lines establishing through rates into the Middle West in connection with interior railroads. This action not only places the water lines under jurisdiction of the interstate commerce commission but will result in some reduction of rates on steel to North Pacific ports via New Orleans and other Gulf ports.

Porter Bros., contractors, Portland, Oreg., have taken a $6,000,000 contract for the construction of the 5000-foot vehicular tunnel under the Detroit river at Detroit. The job will require two years.

There has been no change in pig iron and coke during the last fortnight. Buying is limited as foundries are well stocked.

Bars, Plates and Shapes

Although it is reported that plates are slightly weaker, mill prices are firm at 2.30c, which has prevailed for several months. Mill prices of bars and shapes are unchanged at 2.35c. Both local steel mills are busy with ample small tonnages for local construction and road work. Bids for the James Madison school, Seattle, to cost $425,000, are under consideration. This job involves 300 tons of reinforcing. The only award this week over 100 tons went to the Pacific Coast Steel Co., 175 tons for the Lowell apartments at Eighth and Spring streets.

The Spokane Medical and Dental building, 1500 tons, and the Kettle Falls bridge, 1125 tons, are the largest structural jobs pending. Clackamas Construction Co. was low bidder at $97,170 for the Scottsburg bridge over the Umpqua river, Oreg. This project involves 470 tons of structurals.

Finished Materials

Jobbing houses report business up to average during May and June has opened activity. Due to the action of a Pacific coast interest, mill prices on sheets have been revised downward to the following levels: Galvanized, 4.25c; black, 3.45c; blue, 2.72c. These new prices apply at Seattle, Portland and San Francisco. No change in warehouse prices on these items has been made. Business in sheets is in fair volume.

American Cast Iron Pipe Co. at $39,797 was low bidder for furnishing Tacoma with about 1000 tons of cast iron pipe. Crane Co., Seattle, and Rensselaer Valve Co. have been awarded contracts for furnishing Aberdeen, Wash., with standard and low pressure valves. Beall Pipe & Tank Co. received a small contract for steel pipe from the same municipality, the job being divided with wood pipe.

See Taper in Steel Rate

Buffalo, June 12.—Open-hearth steel operation continues high, with 30 to 31 of 36 furnaces in the district making steel, on daily average. Operating schedules may be close to this rate for the rest of this month but are likely to fall in July, judging from present inquiry and sales.

The Montreal chapter of the American Society of Steel Treating has elected officers as follows: Chairman, Robert Job, vice president, Milton Hersey Co.; vice chairman, Fred H. Williams, assistant test engineer, Canadian National railways; treasurer, Gordon Sproule; lecturer, McGill university; and secretary, Duncan G. MacInnes, associate editor, *Engineering Times.*

Labor Output in Pig Iron Shows Great Gain

Washington, June 12.—An increase from 25 tons in 1850 to 1257 tons in 1925 shows the average increase in production per man in the blast furnaces of this country, according to a study made by the bureau of labor statistics.

The report shows the increase has been almost continuous except for the years immediately affected by war conditions. The number of employes in blast furnaces has increased 44 per cent from 1850 to 1925 the report shows, while the output has increased more than 7000 per cent.

The production per man per year is arrived at by dividing the total production by the number of employes. This shows an increase in the output per man per year from 25 long tons in 1850 to 1257 long tons in 1925. The index of production per man in 1925 was 5028, or an increase of 4928 per cent from 1850.

Between 1850 and 1870 there was no great divergence between the three factors, production, employment, and output per man-year. From 1870 on, the trend of production is very sharply upward, the index number in 1870 being 363. By 1890 the index of production had reached 1754 and the index of output per man-year 1060, while the employment index was 165.

One of the more puzzling problems revealed is the tremendous drop in 1921. Actual employment dropped below the figure of 1850. While production in 1921 was only about half what it was the preceding census year, it still showed an index number of 3310 while the output per man-year dropped to 331 tons, the index number being 1324, as against an index number of 3180 in 1914 and of 2864 in 1919.

Pig Iron Inquiries Gain

(*Concluded from Page* 1559)

Richmond, Ind., purchased 750 tons of malleable, 300 tons from a lake furnace. One company reports sales of 3000 tons foundry iron, the largest lot, 2000 tons, in Ohio and Indiana. Prices are steady.

Chicago, June 12.—A few large inquiries for third quarter and for last half are before the market, but the majority of melters are covering only immediate requirements. Consequently the spot market continues active and it is indicated by shipments, which are continuing at approximately the rate of the past two months that the foundry melt in this district is steady. The market is holding firm to the west of Chicago, which has a steadying effect on the Chicago-Milwaukee market of $18, base, Chicago furnace.

Inquiries for about 7000 tons of foundry and malleable iron have been issued by melters in southern Michigan.

St. Louis, June 12.—During the past several days the leading blast furnace interest in this district sold 16,000 tons of basic iron, 15,000 tons to an east side mill, and 1000 tons to a user in the district proper, for delivery in third quarter. Sales of foundry grades, however, have decreased further, actual transactions reported being under 2000 tons. Inquiry for third quarter is unusually light for this time and purchasing for immediate shipment is confined to small lots. Additional sales of malleable were made, bringing the total since the first of this month to over 6000 tons. While there has been no specific change in quoted prices, competition is keen and there have been reports of sales of small tonnages at slight concessions. Offerings of northern iron have increased and all blast furnace interests are eager to make sales.

Birmingham, Ala., June 12.—Production and delivery of pig iron during June will be steady, the probable make for the month having been sold. Delivery in a few instances will extend into July. Makers say the base price, $16, will be continued through July, at least. Ten blast furnaces are on foundry iron, six on basic and two on special brands.

Philadelphia, June 12.—More pig iron inquiries are noted, mainly for small lots. Consumers are requesting more rapid delivery. Norfolk & Western railroad is inquiring for 700 tons of foundry and malleable and bessemer for the remainder of the year. American Engineering Co., Philadelphia, wants 500 tons; the J. L. Mott Co.'s plant at Trenton, N. J., 100 tons of foundry iron; American Radiator Co., 200 to 300 tons for Gloucester City, N. J., Federal Steel Casting Co., Chester, Pa., 300 tons of low phosphorus. Prices are steady.

Jobber Sales Diminishing

(*Concluded from Page* 1571)

usually heavy. Sheets and wire nails seem to be the only weak spots in the market. The sheet situation is unsettled, reflecting the uncertainty of mill quotations, black and galvanized being weak.

Philadelphia jobbers have advanced prices on bars $2 a ton to 2.60c, the increase applying on both iron and steel bars.

Baltimore finished steel jobbers here are doing a fair business. Their volume in May surpassed April, and June so far has equaled, if not exceeded May. At least two jobbers are forced to engage extra trucks and work overtime every few days to take care of demand. Prices on the heavy rolled products have stiffened. After about a year of chaos, one jobber advanced prices about a month ago, followed enthusiastically by the rest of the trade. The market looks quite firm, the trade here having had a fine opportunity to get a fresh impression of the effects of price cutting. During the period of low prices jobbers operated at a loss or at a nominal profit, and hence there is a general disposition to refrain from precipitating another wave of price cutting. The warehouse market in galvanized and black sheets at Baltimore continues badly demoralized. In galvanized sheets out of stock prices have been cut and there are cases in which sales are made at just enough above the mill price to cover the freight from Pittsburgh and the cost of trucking the material to the consuming plant. The usual range on galvanized sheets out of stock appears to be 4.30c to 4.75c, base delivered Baltimore, but sales out of stock are made as low as 4.15c delivered, and jobbers have made sales of 50 bundle lots, delivered from cars just received from the mills, at even lower prices. Not one jobber so far has shown a willingness to take the lead in setting a firm minimum. The market on black sheets is not as bad as that in galvanized sheets, the usual range on black sheets being 3.60c to 4.00c base delivered locally, while occasional sales are made as low as 3.30c.

The largest consumers in Baltimore are paying 3.10c base delivered for bars, plates and shapes, the same price paid by the small trade. Some instances have arisen where the firmer prices on bars, plates, shapes, cold finished steel, hoops, bands and blue annealed sheets, have been received with great resistance by certain consumers. But this attitude is exceptional and the bulk of the trade, even including the large concerns, is satisfied to buy at the lowest price obtainable. Jobbers are finding, therefore, that it is not necessary to cut in order to get business. Prices on out-of-town business are determined by competition at the various destinations. Prices obtained on shipments north are much better than shipments to southern points. This is because the firm tone and higher prices now prevailing in the Philadelphia jobbing market are in great contrast to the weakness prevailing at such points as Norfolk and Richmond. In selling to customers in Richmond, for instance, Baltimore jobbers have been told they must meet 2.70c base delivered on cold finished steel, and the prices on steel bars in the Southern part of Virginia still range down to 2.60c, base, delivered. Baltimore jobbers have not followed the example of the Philadelphia trade in utilizing quantity differentials which enable the large buyer to get a lower price than the small consumer. At least a couple of Baltimore jobbers thoroughly disapprove of quantity differentials. There seems to be no likelihood that quantity differentials will be used at Baltimore in the near future.

At the annual meeting of the Boston chapter of the American Society for Steel Treating, Harrison B. Parker, Trimont Mfg. Co., Roxbury, Mass., was elected chairman and Dr. Robert S. Williams, Massachusetts Institute of Technology, Cambridge, Mass., was made vice chairman. Howard E. Handy, Saco-Lowell Shops, Biddeford, Me., was re-elected secretary-treasurer.

Machine Industry Active in Germany

Washington, June 12.—Although total sales amounting to 2,600,000 tons were 600,000 tons smaller than during prewar times, the improvement of economic conditions in Germany in 1927 brought about intense activity in its machinery industry, says Consul General C. B. Hurst, Berlin, in a report to the department of commerce.

German machine exports exceeded imports by 7,500,000 marks in 1927 (value of mark is $0.2383, thereby representing the highest export value of all German industries. These favorable results were reached by the German machine industry although the cost of production rose considerably during 1927, while, owing to severe competition, an increase of the price schedule was not possible.

A lively demand existed for steam engines and particularly for steam engines for vessels. Business in pumps and compressors was good as, owing to a large number of orders, many enterprises were obliged to extend their plants and improve conditions of production. A remarkable demand from chemical enterprises prevailed as well as from coal mines for machinery used for the production of nitrogen, other chemical products and the liquidation of coal.

Automotive Exports Still High in April

Washington, June 12.—Automotive shipments abroad continued their high level in April, according to the automotive division, department of commerce, which placed exports at $46,201,256 compared with $46,168,743 the same month last year.

The high level at which automotive exports have held is shown by shipments amounting to $164,748,938 for the January-April period, and its monthly average of $41,187,234, compared with $37,274,801 for the like period of 1927 and with $31,342,039 for the 1926 period.

The unit value of passenger cars and trucks for the month under review was $736 and $725, respectively, as against $730 and $636 in April, 1927.

Canada again occupies the position of leading market for passenger cars, closely followed by Australia and Argentina. Sweden, which occupied second position during March of the present year, drops to the eighth position during April.

In the truck field Brazil rose from second position, which it occupied in March, to first place during April, followed by the United Kingdom, Canada, and Australia. The most noticeable increase in shipments of trucks was registered by the United Kingdom and Canada.

West Australia May Take Road Machinery

Washington, June 12.—The opportunity of increasing sales of road machinery in Western Australia is particularly promising because of the urgent need for better roads in the vast agricultural areas which are just being exploited, Trade Commissioner Charles F. Baldwin, Sydney, reports to the department of commerce.

A considerable amount of money has been appropriated to support a road program which contemplated the construction and improvement of roads in the country districts particularly in the wheat growing areas. This construction is naturally limited by the small population of the state, only 390,000 persons, but the rapid development of the western section of the commonwealth is emphasizing the urgent need for good roads, and road building will undoubtedly progress as rapidly as possible.

Will Make Prize Awards for Advertising

According to the provisions of the Harvard Advertising awards for 1928, as just announced by the Harvard Business school, Cambridge, Mass., awards of $2000 each will be given as follows: (1) for a national campaign of a specific product; (2) for a local campaign for a specific product or merchandise; (3) for a general or institutional campaign; (4) for a campaign of industrial products. Among the individual awards, a new prize of $1000 will be offered this year for the advertisement most effective in its use of display line.

In addition, there will be the prizes for the most effective use of text, of pictorial illustration and of typography. The gold medal for distinguished service to advertising is again included among the awards to be offered. These awards were founded by Edward W. Bok in 1923 and this is the fifth year for the competition.

About 1250 tons of 24-gage sheet steel will be required to stamp out the 1,800,000 sets of 1929 automobile license plates for the state of Ohio. Placed side by side, these tags would completely cover more than 41 acres.

Chicago Power Show on Alternate Years

The fourth Midwestern Engineering and Power exposition will be held in the Coliseum, Chicago, Feb. 12-16, 1929, it has just been announced. Also, beginning with 1929, the expositions will be held on the alternate year basis, with shows in 1931 and 1933. This program will bring to Chicago one large power exposition every two years and is said to be in conformity with the idea of many manufacturers who wish to exhibit one year in New York and one year in Chicago. Further, the program conforms with plans being made for the World's Fair in that city in 1933.

At the 1929 exposition it is proposed to have the layout present a classified plan for manufacturers' exhibits, thereby giving the visitor an opportunity to make a thorough inspection of various classes of equipment in minimum time. During the same week, a short course of lectures on power engineering will be conducted.

India Is Importing Less Industrial Machinery

Excluding railway locomotives, electrical equipment, agricultural machinery, sewing and knitting machinery and typewriters, imports of industrial machinery into India from March, 1926 to March, 1927, amounted to 101,092,500 rupees, or $36,656,146, according to information supplied by the industrial machinery division of the department of commerce, Washington. This value showed a decrease of 13.4 per cent compared with the corresponding period of 1925-26 and of 6 per cent compared with 1924-25.

On the basis of figures compiled, the United States imports into India have shown a constant increase on a percentage basis. On the other hand, imports of the United Kingdom have shown a steady decrease in percentage, while Germany and Austria's imports have increased in both percentage and value during the last three periods.

The Chicago chapter of the American Society for Steel Treating has elected the following officers: Chairman, A. M. Steever, metallurgical engineer, Great Lakes Forge Co., Chicago; vice chairman, Donald Colwell, metallurgist, Stewart Die Casting Co., Chicago; and secretary-treasurer, J. A. Comstock, assistant metallurgist, Peoples Gas Light & Coke Co., Chicago.

Industrial Men in the Day's News

Dr. B. D. Saklatwalla, Vice President, Vanadium Corp. of America

JOINING a company that was on the verge of bankruptcy, he was able in the short space of four months to put it on a paying basis.

ACADEMIC and research studies in India, Germany and in England helped prepare him for his industrial career in America.

HE IS an author and art collector as well as the recipient of many honors for scientific research.

PUTTING a financially embarrassed company on a sound dividend paying basis within the short space of four months is the notable record made by Dr. B. D. Saklatwalla soon after he arrived in this country. This achievement was made with the Vanadium Corp. of America, with which he became associated in August, 1909. At that time the company was deeply in debt and was manufacturing at a loss, thus building up rather than decreasing its indebtedness. Dr. Saklatwalla became its metallurgist and at once started to alter completely the method of production. To do this he had to design and build special electric furnaces and to perfect a unique method of obtaining vanadium from the ore. So energetically and effectively did he throw himself into this work, however, that by December of that year the company was able to declare a 40 per cent dividend.

Dr. Saklatwalla was born in Bombay, India, into a family already interested in mining and metallurgical problems. His mother was the sister of J. M. Tata, the founder of the Tata Iron & Steel Co. of India. The son obtained his early schooling in Bombay and later attended the University of Bombay, specializing in chemistry and physiology. This trend toward chemical and physico-chemical subjects has continued throughout his life. Before he left the University of Bombay he had obtained a scholarship to the Polytechnic Institute of Charlottenburg, Germany.

As a result of this he spent several years studying in Germany, part of the time at the University of Berlin. While engaged in this study in 1906 he received the Carnegie scholarship for original research work given each year by the Iron and Steel Institute of Great Britain. This scholarship carried with it a fund sufficient for two years more of study. Part of this time he studied in Germany and part in England and at the end of the two-year period received his doctor's degree. By this time he had made valuable contributions to science in various subjects, particularly in connection with the use of tungsten for incandescent lights. In 1908 he came to the United States to see his mother, who was living here, and also to negotiate with the General Electric Co., Schenectady, N. Y., in connection with his tungsten patents. While engaged in this negotiation he became acquainted with J. J. and J. M. Flannery, two brothers who had purchased vanadium mines in South America but who at that time scarcely knew what they had or what to do with it.

After demonstrating his ability to reorganize the manufacturing processes for the Vanadium company, Dr. Saklatwalla gradually was given more responsibility in the organization. Under his direction a new plant was built and the present extensive laboratories were developed. He is now vice president of the company in charge of the research department and active in many other fields. He is an unusually energetic, hard working man and he is a Parsee. Part of his enthusiasm and energy he attributes to this last feature. The Parsees are a race of people originating in northern Persia and proud of a history which dates back to the earliest historical time. Some Parsees migrated to India and now form a small but influential group in the intellectual life of the country.

Dr. Saklatwalla's great hobby is art, and he is almost as well known as an art connoisseur as he is as a metallurgist. His home at Crafton, Pa., outside of Pitts-

burgh, is a veritable art gallery. Here he has one of the finest collections of modern art in this country.

He says he has no time for golf but he is interested in his home and particularly in his gardens. He is a genial and modest man, strongly imbued with that imperturbability characteristic of the people of the East.

In 1924 he received the Grasselli medal from the American section of the Society of Chemical Industry. He is the author of more than 20 scientific papers and is a member of ten engineering societies.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

MARTIN E. McKEE has been appointed district sales manager at Cincinnati for the Republic Iron & Steel Co., Youngstown, O. Warner A. Peck has been named assistant district sales manager.

James B. Beyer has been made district sales manager in St. Louis. The headquarters of the Republic company in St. Louis will be located in the Shell building, after July 1.

A. G. Brown has been named district sales manager in San Francisco for the Republic company.

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Charles T. Scott, president, Scott Steel Co., Chicago, has returned from a trip to the Coast and Canada.

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O. J. H. Hartsuff, of the Edgar Thomson steel works, has been elected a director of the Carnegie Steel Co., Pittsburgh.

* * *

Charles O. Lavett has been placed in charge of the recently opened San Francisco offices of the Buffalo Foundry & Machine Co., Buffalo.

* * *

J. Dale Reynolds, Monterey, N. L., Mexico, has been appointed representative in Mexico for Ohio Electric & Controller Co., Cleveland.

* * *

T. L. Simpson has been appointed manager of the Pittsburgh office of the American Cast Iron Pipe Co., Birmingham, Ala., at 1209 Empire building.

* * *

D. B. Thompson has joined the Splitdorf Rol-Iron Co., Detroit, in an executive sales position. He was formerly sales promotion manager of the Servel Corp., New York.

* * *

Walter Cross has become associated with Babcock & Wilcox Co., New York, as consulting chemical engineer. His headquarters will be in Kansas City.

* * *

Richard G. Jones, secretary and treasurer of Briggs & Turivas Inc., Chicago, has been elected a vice president of the Foreman National bank, Chicago.

* * *

Hal E. Booth, for many years manager of the bituminous coal mines of the M. A. Hanna Co., Cleveland, has been elected vice president in charge of sales of Pittsburgh Coal Co., Pittsburgh.

* * *

H. A. Deute, for eight years advertising and sales promotion manager for the Borden Co., New York, has been made vice president in charge of operations of the Billings & Spencer Co., Hartford, Conn.

* * *

C. A. Heiser has been appointed district manager at Dallas, Tex., for the Oliver Iron & Steel Corp., with headquarters at 409 Browder street. He formerly was assistant sales manager of the Southwest General Electric Supply Co. of Dallas.

* * *

Alvan Macauley, president of the Packard Motor Car Co., Detroit, has been elected president of the National Automobile Chamber of Commerce, succeeding Roy D. Chapin, chairman of the Hudson Motor Car Co., Detroit.

* * *

A. J. Wager, for nine years superintendent of power sales for the Milwaukee Electric Railway & Light Co., Milwaukee, has resigned, effective July 1, to engage in the practice of industrial electric heating engineer. He will devote himself primarily to being consultant on electric heating problems.

* * *

F. C. Allen Jr., founder and formerly president of Allen & Billmyre Co. Inc., has severed his connection with that company and is now president of Allen Air Appliance Co. Inc., New York. Mr. Allen is a member of the American Society of Mechanical Engineers.

* * *

W. C. Fownes, head of the Fownes & Orr Co. Inc., and formerly president of the Standard Seamless Tube Co., Pittsburgh, has been elected a director of the McKinney Mfg. Co., Pittsburgh, hardware manufacturer. J. B. Orr, associated with Mr. Fownes, also has been elected a director of the McKinney company.

* * *

T. M. Galbreath, manager of the Cleveland office of the Sharon Steel Hoop Co., has been appointed assistant general manager of sales, with headquarters at Sharon, Pa.

E. R. Garlick, special representative of the Sharon general office, will succeed Mr. Galbreath as Cleveland manager of sales, effective June 15.

* * *

Edward Elson has been elected president of the Harry Benjamin Equipment Co., St. Louis, succeeding Harry Benjamin, who died several months ago. Fred S. Fuld has been elected secretary and treasurer of the company. Mr. Elson had been with the Walter A. Zelnicker Supply Co. for 25 years, and was at one time its vice president.

* * *

G. F. Cady has been appointed shop superintendent of the Horton Steel Works plant at Bridgeburg, Ont., succeeding Ezra E. Shull whose resignation was announced in IRON TRADE REVIEW, issue of May 31. Mr. Cady had been with the Chicago Bridge & Iron Works at the Greenville, Pa., plant for 11 years.

* * *

Arthur V. Davis, president of the Aluminum Co. of America, has been elected chairman of the board of directors.

Roy A. Hunt has been elected president to succeed Mr. Davis.

Edward K. Davis, director and vice president of the Aluminum company, has resigned to become president of Aluminum Ltd., Canadian corporation formed to take over the foreign interests of the Aluminum company.

* * *

J. F. Bauer, formerly connected with E. Arthur Tutein Inc., has become

associated with district sales office of Hickman, Williams & Co. Inc., New York.

Describes Deoxidation with Silicon

One of the primary factors in the rate of elimination of silicates from open-hearth steel is the size of the particle formed on deoxidation, states the federal bureau of mines. If excess silicon is added to a medium or high-carbon steel very small glassy particles are formed which rise slowly out of the steel. On the other hand, if there is sufficient iron oxide or manganese oxide to flux the silica, a rapid increase in rate of elimination is found due to the increased size of the silicate particle.

From the results of laboratory work on deoxidation with silicon performed by the bureau it is possible to predict just what type of inclusion will be formed with any silicon addition to any type of open-hearth steel, provided manganese is not added at the same time. Predictions from the laboratory work have been checked on various open-hearth heats and out of 67 steel samples studied only six samples showed types different from that predicted. These results make it possible to designate the optimum amount of silicon to add to any open-hearth heat in killing in the furnace and show that if clean steel is desired certain grades of steel should be killed in the furnace with silicon and manganese rather than silicon alone.

Czech Exports Increase

Although Czechoslovak exports of agricultural machinery to Russia decreased in 1927, increased sales to other countries more than offset that decline, according to that country's agricultural machinery association, states Consul General A. C. Frost, Prague, in a report made public by the department of commerce.

Improvement was particularly noted in the trade with South America and South Africa. Value of agricultural machinery exports last year is given at approximately $2,700,000, the largest item being sowing machines, valued at slightly more than $600,000. Exports of mowing machines are also declared increasing.

The Czechoslovak law which permits importation free of duty of machinery not manufactured in the country will terminate June 30, 1928. It is expected that the law will again be passed without any substantial changes, extending through 1929.

Obituaries

EDMUND D. GARFIELD, 54, associated with Manning, Maxwell & Moore Inc., Chicago, died June 5 in St. Paul, following a short illness of pneumonia. He had been in charge of railroad sales work of Manning, Maxwell & Moore Inc. and was widely known among dealers and users of machine tools. Funeral services were held at St. Paul June 7.

* * *

Dwight Wheeler, for 45 years president of the Acme Shear Co., Bridgeport, Conn., died June 6 in that city, aged 86.

* * *

David C. Crummey, founder and president of the Bean Spray Pump Co., San Jose, Calif., died May 22, aged 84.

* * *

John McGaff, 54, head of the Sellers Mfg. Co., Chicago, and a consulting engineer in the steel industry, died in Chicago following an accident.

* * *

Joseph Riter, 46, formerly associated with the Riter-Conley Co., of which his father, Thomas B. Riter, was one of the founders, died May 16 in London, where he had made his home since 1916.

* * *

Harold S. Brown, president, National Pipe Bending Co., New Haven, Conn., died June 6 in that city. A native of Brooklyn, he went to New Haven 10 years ago to be general manager of the company and later was elected president.

* * *

Samuel Higham, 80, for many years vice president and later president of the Fuller & Johnson Mfg. Co., Madison, Wis., maker of gasoline engines, pumps and other farm machinery, died June 1. Mr. Higham retired about twenty years ago.

* * *

Theodore Disch, 78, formerly superintendent of the Prescott Iron Works, Menominee, Mich., died June 3. For the past eight years Mr. Disch gave his time as an instructor in the vocational school of Marinette, Wis., twin city of Menominee.

* * *

Charles C. Ely, 81, president and treasurer of the Trimount Mfg. Co., Boston, died in that city recently. He was born in Oswego, N. Y., and in his early years was engaged in the drug business in New York state. Upon the death of one of his brothers in 1902, Mr. Ely went to Boston to conduct the Trimount company, organized by the deceased brother.

* * *

W. R. Dorsey, 53, for many years identified with the United States Electrical Tool Co., Cincinnati, originally in its main office but for the past five years as Pittsburgh district representative, died June 8 in Pittsburgh. Mr. Dorsey resided at Sheridan, Pa.

* * *

Henry M. Garlick, 79, chairman of the board of the First National Bank at Youngstown, O., and identified for many years as a financier for many important Mahoning Valley industrial concerns, died at Waverly, N. Y., June 9. He was born in Youngstown, O., and for many years was one of the leading financial and industrial figures of eastern Ohio.

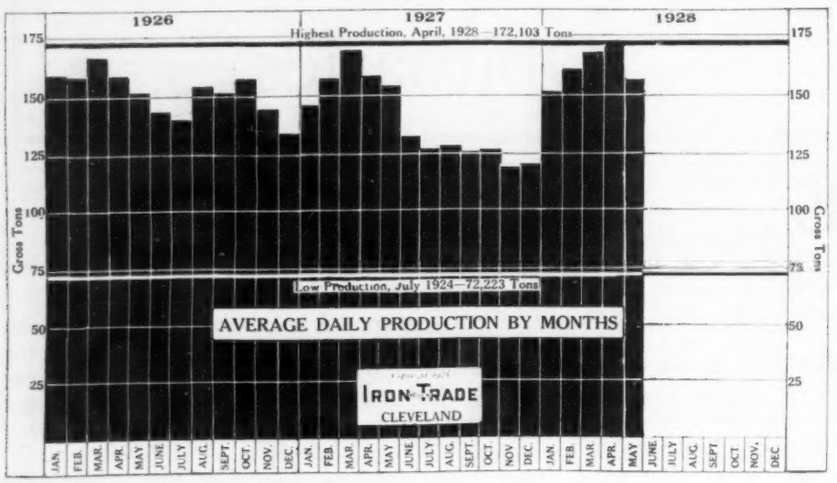
* * *

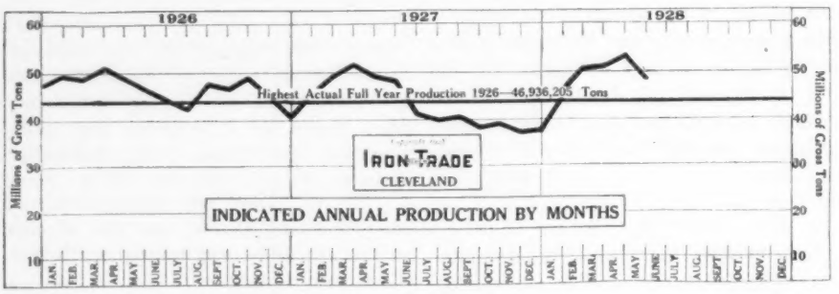
Jacob Trautman Jr., 53, identified with the Colonial Steel Co., Pittsburgh, since it was organized 25 years ago, died in Los Angeles, June 2, where for about a year he has been Pacific coast manager for the Colonial company. Prior to that he was general sales manager at Pittsburgh. Mr. Trautman was prominent in the affairs of the American Society for Steel Treating.

Track Shipments Gain

Shipments of trackwork for rail track of 60 pounds per yard and heavier amounted to 14,141 net tons in May, according to statistics compiled by the American Iron and Steel institute. In April shipments totaled 13,511 tons, while in May one year ago, the figure was 16,768 tons. For the five months just ended, shipments totaled 63,413 tons, as compared with the corresponding period of 1927.

A committee now is considering the matter of selecting the American papers which are to be presented at the World Engineering congress in Tokio, Japan, next year. Technical societies will be called upon for help in choosing authors for these papers. Plans also are under way to extend hospitality in the United States to European delegates in their movement from the Atlantic to the Pacific.





Steel Ingots in Sharp Drop

FOR the first time in six months the upward swing of steel ingot production has been interrupted. From a level of 120,270 gross tons per day last November, operations by successive increases reached a new record high level of 172,103 tons in April, but in May the daily rate dropped back to 155,674 tons. Compared with the output of April, the production of last month showed a loss of 16,429 tons, or 9.55 per cent. One year ago, the daily rate was 155,663 tons, or practically the same as was established in May of this year.

According to statistics compiled by the American Iron and Steel institute, total production of bessemer and open-hearth steel ingots in May was 4,203,190 gross tons, as against 4,302,573 tons in the preceding month. The decrease amounted to 99,383 tons. This was in spite of the fact that May had 27 working days as compared with 25 in April. Regardless of the sharp drop in operations last month, the production for the first five months constitute a new high record. Thus far this year total production has amounted to 21,049,919 tons, or 161,922 tons per day. In the corresponding period of last year, the total was 20,311,778 tons and the daily rate 157,456 tons.

With a production of 155,674 tons per day in May and 311 working days in the year, the indicated annual production was 48,400,000 tons. For April the rate was 53,500,000 tons. According to the institute's calculation, the country had a capacity of 58,627,910 gross tons of bessemer and open-hearth ingots as of Dec. 31, 1928. On this basis, operations for May represented 82.58 per cent, as compared with 91.29 per cent in April. One year ago operations were at the rate of 84.59 per cent.

Steel Ingot Production—1927-1928

94.68 Per Cent of Industry Reporting

Gross Tons

1927	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,042,133	545,596	3,587,729	3,789,874	26	145,764	79.21
Feb.	3,043,492	565,226	3,608,718	3,812,046	24	158,835	86.31
March	3,702,660	590,709	4,293,369	4,535,272	27	167,973	91.28
April	3,341,750	565,440	3,907,190	4,127,335	26	158,744	86.26
May	3,273,593	557,785	3,831,378	4,047,251	26	155,663	84.59
Total 5 mos.	16,403,628	2,824,756	19,228,384	20,311,778	129	157,456	85.56
June	2,823,107	486,053	3,309,160	3,495,609	26	134,446	73.06
July	2,596,349	436,883	3,033,232	3,204,135	25	128,165	69.65
Aug.	2,806,347	505,596	3,311,943	3,498,549	27	129,576	70.41
Sept.	2,622,977	471,548	3,094,525	3,268,881	26	125,726	68.32
Oct.	2,643,562	495,845	3,139,407	3,316,292	26	127,550	69.31
Nov.	2,478,627	481,599	2,960,226	3,127,015	26	120,270	65.36
Dec.	2,557,955	448,154	3,006,109	3,175,484	26	122,134	66.37
Total	34,932,552	6,150,434	41,082,986	43,397,743	311	139,543	75.83
1928							
Jan.	3,280,247	498,746	3,778,993	3,991,332	26	153,513	81.43
Feb.	3,308,728	521,366	3,830,094	4,045,304	25	161,812	85.84
March	3,700,411	567,309	4,267,720	4,507,520	27	166,945	88.56
April	3,509,637	564,039	4,073,676	4,302,573	25	172,103	91.29
May	3,397,631	581,949	3,979,580	4,203,190	27	155,674	82.58
Total 5 mos.	17,196,654	2,733,409	19,930,063	21,049,919	130	161,922	85.89

Figures exclude crucible and electric ingots. Operation percentages for 1927 are based on an annual open-hearth and bessemer steel ingot capacity of 57,230,350 tons, as of Dec. 31, 1926; for 1928, on 58,627,910 gross tons as of Dec. 31, 1927.

Oil-Electric Locomotive Built for Switching

Westinghouse Electric & Mfg. Co., East Pittsburgh, has just shipped what is said to be the first lightweight oil-electric switcher locomotive to be built in America to New York where it will be put in service on the Long Island railroad. This locomotive, which is capable of producing 600 horsepower, weighs only 85 tons and burns the cheapest grades of fuel oil. The unit is 47 feet long and geared for a maximum speed of 34 miles per hour. The engine and electric equipment were built by the Westinghouse company, with the mechanical parts supplied by the Baldwin Locomotive Works, Philadelphia.

Mining Institute To Meet on Menominee Range

The Lake Superior Mining institute announces that it will conduct its twenty-sixth annual meeting on the Menominee Range in Michigan, Sept. 7-8. The institute has not met on this range since August, 1911, and as much new development has taken place since that time, a large attendance is expected at the meeting. A. J. Yungbluth, Ishpeming, Mich., is secretary of the institute.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

WRIGHT AERONAUTICAL CORP. has purchased one of two plants of the American Locomotive Co. at Paterson, N. J. The American Locomotive Co.'s properties in that city include the Cooke Locomotive & Machine Co. and a portion of the old Rogers works. The Cooke plant was permanently closed in 1926 and subsequently dismantled as part of the company's policy of concentrating the building of locomotives at its larger and more modern plants. The portion of the Rogers works remaining to be sold is small.

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FITZSIMMONS & COLE MFG. CO., 1208 House building, Pittsburgh, has changed its name to West Penn Machinery Co.

* * *

WILLIAM M. ORR CO. has been appointed Pittsburgh district sales agent for the Atlas Steel Corp., Dunkirk, N. Y.

* * *

LANG & SCHARMANN INC., Marshfield, Wis., is a corporation succeeding the former partnership of George Lang and Otto Scharmann, operating a foundry and machine shop.

* * *

BOTFIELD REFRACTORIES CO., Swanson and Clymer streets, Philadelphia, has appointed Builders & Industrial Supply Co., 4090 Detroit street, Toledo, O., distributor of its refractory products and appliances.

* * *

LALLY-McKELVY INC., Union Trust building, Pittsburgh, has been appointed representative in the Pittsburgh district for the Chicago Nipple Mfg. Co., Chicago, Baltimore and Los Angeles.

* * *

MOORE BROS. CO., Joliet, Ill., manufacturer of stoves, recently placed an order for gas-fired porcelain enameling furnace, which will be installed by the Ferro Enamel Supply Co., Cleveland.

* * *

LINCOLN RADIATOR CO., Utica, N. Y., has leased the vacant plant of the National Radiator Co. in North Tonawanda, N. Y., and will move its production there in the near future. Production will be started in the new plant with a working force of about 150 men.

* * *

RELIANCE STEEL & MACHINERY CO., New Haven, Conn., has combined its office and warehouse and removed to larger quarters at 106 Water street. Additional facilities have been provided to increase service.

* * *

ELLIOTT ELECTRIC SERVICE CO., 2000 West Twenty-fifth street, Cleveland, has bought from the Baker-Raulang Co., Cleveland, part of its plant on the same street. The purchase includes a four-story building 64 x 112 feet.

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ORNAMENTAL BRONZE MFG. CO. LTD., Lancaster, O., has been organized to manufacture lighting fixtures, cast bronze ornamental work for public buildings, and special art castings. J. T. Conquest is general manager.

* * *

ALDEN MFG. CO., Springfield, Mass., which recently decided to move to Brockton, Mass., has elected the following officers: President and treasurer, Milton Alden; vice president, John Pauly; directors, Lincoln Davis, Charles W. Holland and Maynard A. David.

* * *

McCLINTIC-MARSHALL CO., Pittsburgh, announces the opening of its southwestern office, 1546 Telephone building, St. Louis. John W. Davis, contracting engineer for the company, is in charge of the St. Louis office. Mr. Davis has been with the Chicago office of McClintic-Marshall Co. for some years.

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PACKAGE MACHINERY CO., Springfield, Mass., has purchased Ferguson & Haas, Inc., New York, manufacturer of wrapping machinery. The line of the former will be increased and Milford Ferguson and Edward Haas will become connected with the company as engineering advisors.

* * *

ARMSTRONG ELECTRIC & MFG. CORP., 50 East Forty-second street, New York, formed recently through a merger of the New Era Electric Range Corp., New York, and the Armstrong Mfg. Co., Huntington, W. Va., has elected Thomas E. Spence president. In addition to electric ranges the company is working on new products involving heating by electrical resistance.

* * *

ART METAL CONSTRUCTION CO., Jamestown, N. Y., is celebrating its fortieth anniversary. The company, which was formed in 1888 as the Fenton Metallic Mfg. Co., has 700,000 square feet of manufacturing space, employs over 1200 people and has 24 branch offices in the United States and an agency or dealer representative in every principal city, besides doing an export business.

* * *

OLIVER IRON & STEEL CORP. Pittsburgh, manufacturer of galvanized pole line hardware and construction specialties, has opened a new warehouse at Nineteenth and Campbell streets, Kansas City, Mo. W. M. Watters, district manager of the Oliver corporation, formerly at 209 Baltimore building, has moved his offices to the warehouse building and will be in charge.

* * *

ALLEN AIR APPLIANCE CO., Grand Central Terminal building, New York, has elected F. C. Allen Jr. its president. He was founder and former president of Allen & Billmyre Inc., recently severing his connection with that concern. The main office and plant of the company is at Glens Falls, N. Y. The latter includes a pattern shop, foundry, machine shop and assembly department. Its products include centrifugal blowers and exhausters, single and multi-stage for industrial use, and stationary and portable vacuum cleaners. The company designs and manufactures heavy duty industrial systems for the removal of dust, as well as pneumatic conveying and drying systems.

* * *

CANADIAN VICKERS LTD., Montreal, Que., announces the following appointments: George Barr, managing director and vice president; D. B. Carswell, operating vice president in charge of marine construction and repairs; H. H. German, operating vice president in charge of development of new work, with supervision over the aircraft department; Oswald Leger, operating vice presi-

dent in charge of the structural steel department; R. Ramsay, operating vice president in charge of industrial engineering department; J. W. Savidant, comptroller and treasurer, and F. G. Wilson, secretary. John C. Newman, president of General Steel Wares Ltd., and George R. Cottrelle, Toronto, have been added to the board of directors.

* * *

CHARLES L. WARD CO., 701 Midland building, Kansas City, Mo., has been appointed sales representative by the Ohio Electric & Controller Co., Cleveland, covering Kansas City, Omaha and Dallas, Tex., and surrounding territory.

* * *

L H. MORRIS, New York representative of the Ohio Locomotive Crane Co., Bucyrus, O., and the Ohio Power Shovel Co., newly organized subsidiary of the Lima Locomotive Works, Lima, O., has moved his offices from room 425 to room 706, 30 Church street, New York.

* * *

BORG-WARNER CORP., which has been under formation for some time, has been completed and is in effect. It is composed of the Borg & Beck Co., Chicago; the Marvel Carburetor Co., Flint, Mich; Warner Gear Corp., Muncie, Ind.; and the Mechanics Machine Co., Rockford, Ill.

* * *

WORCESTER TAPER PIN CO., Worcester, Mass., has purchased the Christianson Screw Co., Newton, Mass., and is moving both businesses into larger quarters on May street, Worcester. The new plant, with a larger output of screws and pins, is to be ready July 1. Thomas Crabtree is president and treasurer of the Worcester concern.

* * *

LAPHAM-HICKEY CO., Chicago, iron and steel warehouse, has bought from the Central Manufacturing District, Chicago, 28,000 square feet at Forty-seventh place and South Turner avenue, upon which it will build a one-story plant with boiler room. Shipping facilities will consist of a freight platform and loading bay. The company warehouses and acts as mill representative for special commercial steel.

* * *

HEYL-PATTERSON, INC., Pittsburgh, has booked contracts including an air drying or cleaning plant for the Berwind-Whyte Coal Mining Co., central Pennsylvania, and a domestic coke handling plant for the New England Fuel & Transportation Co., Everett, Mass. A 10-ton coal handling bridge with 350-foot span for the by-product ovens of the Hamilton By-Product Coke Ovens Ltd., Hamilton, Ont., has been ordered from this company. This ore bridge is the man-trolley type.

* * *

THOMAS A. EDISON INC. and Splitdorf Bethlehem Electrical Co. have formed an association of interest for the manufacture of electro-radio receivers and electric phonographs. Combined patents of the two companies will be utilized. Patents of the Radio Corp. of America will be used under license. The companies will maintain their identities. Charles Edison becomes a director of the Splitdorf company. Walter Rautenstrauch, president of that company, will become consulting engineer for the Edison company.

* * *

NORTHERN CONVEYOR & MFG. CO., Janesville, Wis,. will build an addition of 28,400 square feet, practically doubling its manufacturing area, to care for increasing business. Earlier in this year the company added 9000 square feet by an addition, 60 x 150 feet. The forthcoming extension will be 100 x 150 feet and will cost about $60,000. New plant equipment costing nearly $20,000 has recently been installed, and the new building will require an investment of a considerably larger sum. The Northern company manufactures material conveyors, hoists and other similar contractors' equipment of both portable and stationary types. Jesse B. Whitnall is president; Harold E. Whitnall, vice president; George R. Whitnall, secretary, and John Whitnall, treasurer.

* * *

KEARNEY & TRECKER CORP., Milwaukee, manufacturer of milling machines, celebrated the thirtieth anniversary of its founding, under auspices of its Old Timers' club, June 2. Guests included 80 executives and supervising members of the firm. Kearney & Trecker opened for business May 17, 1898, in a small machine shop equipped with a second hand drill press, a planer and a lathe. The personnel included Edward J. Kearney and Theodore Trecker, who had decided to go into business if Admiral Dewey won the battle of Manila Bay, May 1 of that year. Both partners had been in the employ of the Kempsmith Mfg. Co., Milwaukee, and when news of the victory came, they resigned and formed their own firm. Kearney & Trecker Corp. is now one of the largest drilling machine manufacturing concerns in the world.

* * *

CALUMET STRUCTURAL IRON WORKS, 1211 East Seventy-third street, Chicago, will be in charge of Augustus Hendelman, who has bought the interest of his partner, B. A. Zajeski.

* * *

CINCINNATI BALL CRANK CO., Cincinnati, is being refinanced and reorganized. Ludwig Kemper, formerly vice president and treasurer of the Midland Steel Products Co. and treasurer of Otis Steel Co., will be president and general manager of the new company. Clifford Greene, who has been president since its organization in 1906, will become chairman of the board. No other changes will be made in personnel. The company manufactures tubular bumpers, automobile parts, high-pressure lubricating equipment and supplies a number of important automobile manufacturers. A new company is to be formed, pending approval by stockholders.

International Cartels Play Important Role

Washington, June 12.—The international cartel seems destined to play an increasingly important role in Europe's economic and political life, states Louis Domeratzky, of the department of commerce. This form of international agreement, he points out, is not a postwar development.

Previous to 1914 international cartels were functioning in such important industries as iron and steel, chemicals, glass and aluminum. These prewar cartels were essentially economic, resorted to primarily for the purpose of dealing with the difficulties of the particular industries involved. The international cartel in its postwar phase, the report states, is looked upon by its chief exponents as a means for readjusting the whole European economic structure, putting an end to competition and even replacing tariffs by cartel agreements. This view of the development of the cartel movement, according to Mr. Domeratzky, is somewhat overdrawn although there is no doubt but that the function of these cartels have been greatly expanded.

One of the most significant features of the whole movement for international economic agreement, Mr. Domeratzky declares, is the prominent part played by Germany in initiating and carrying on the negotiations. This position, he declares, is quite in keeping with that country's pre-eminence in industrial development on the Continent and its traditional attitude toward industrial amalgamations.

Nickel steel usually is heat treated at a lower temperature than chrome or tungsten steels.

British Pig Iron Exports Drop

Dutch Interests Place Orders for Ships on Northeast Coast—Birmingham Company Obtains Contract from South America for 500 Bogie Cars—Tin Plate Mills Booked Full to Autumn—Continental Prices Firm

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, June 12.—(*By Cable*)—British exports of iron and steel products from Middlesbrough show substantial decline for May, but an improvement is expected this month. Several orders for ships for Dutch interests have been received by builders on the North East coast. The Birmingham Railway Carriage Co. has received an order for 500 bogie cars for delivery to South America. Steelworks are obtaining miscellaneous business, and some orders for rolling stock castings. The market for pig iron is quiet.

Continental ferromanganese demand is improving. Galvanized sheets are firm, though business is light. Tin plate mills are running 95 per cent, some being booked full until autumn. Orders are being received from Australia and the Far East.

German steel mills have three to four months' business on hand. Exports are satisfactory, especially of semifinished steel. The French domestic market is quieter, owing to uncertainty with respect to stabilization of the franc. Exports, however, are satisfactory, and works are well booked. Belgian markets are firm. The Cockerill works has obtained a contract for two steamers for the Dover-Ostend line.

British Steel Demand and Prices Are Better

BIRMINGHAM, Eng., June 1.—(*European Staff Service*)—Urgency of demand for steel is shown by the brevity of the holiday. Frodingham in Lincolnshire distinguished itself by working through bank holiday and in all districts work was resumed Tuesday or Wednesday. To some extent this is attributable to good order books, but in most cases it merely reflects the change from foreign supplies to British mills, and the habit of ordering small tonnages, the effect of which is that deliveries have to be practically immediate.

Contrary to most people's expectations, the rise in Continental values

Sterling $4.88

has become persistent, advices of higher prices being received at least twice a week. For the first time for many years they now offer the buyer little advantage over the home mills. Pig iron competition may be said to have ceased and new exports to the Continent are developing, although total May shipments showed considerable reduction on the Middlesbrough figures for April. The Tees-side furnaces have sold their output during June, and some inroads have been made into stocks. Ferromanganese is in better demand at £13 15s ($67.10) for home and £13 5s ($64.66) to £13 10s ($65.88) for export.

Trade continues quiet on the west coast with unchanged prices and consumers still avoid forward bookings. The best shipments are to the Midlands and Scotland. Eleven furnaces are in operation, a poor comparison with prewar achievements, but the make is about absorbed. The industry greatly needs relief in transport rates and reduction of local rates.

The steel trade undoubtedly is in a much better position through relaxation of foreign competition. Several steelworks have excellent orders

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 11

Export Prices f. o. b. Ship at Port of Dispatch—By Cable

	British Gross Tons U. K. Ports	£ s d	*French* Metric Tons Channel Ports	£ s d	*Belgium and Luxemburg* Metric Tons Channel Ports	£ s d	*German* Metric Tons Rotterdam or North Sea Port	£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$16.10	3 6 0*	$15.37	3 3 0	$15.37	3 3 0	$15.62	3 4 0
Basic	15.86	3 5 0	14.64	3 0 0	14.64	3 0 0	15.37	3 3 0
Basic-bessemer	16.84	3 9 0†	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Hematite, Phosphorus 0.02-0.05	17.08	3 10 0	22.20	565*	.....	.....	17.08	3 10 0
SEMIFINISHED STEEL								
Billets	$29.28	6 0 0	$23.67	4 17 0	$23.67	4 17 0	$22.45	4 12 0
Wire rods	42.70	8 15 0	28.06	5 15 0	28.06	5 15 0	28.06	5 15 0
FINISHED STEEL								
Standard rails	$37.82	7 15 0	$31.11	6 7 6	$31.11	6 7 6	$31.11	6 7 6
Merchant bars	1.53c	7 0 0	1.27c	5 15 0	1.27c	5 15 6	1.29c	5 17 0
Structural shapes	1.61c	7 7 6	1.07c	4 17 6	1.08c	4 18 6	1.10c	5 0 0
Plates, ship, bridge and tank	1.77c	8 2 6	1.41c	6 8 0	1.41c	6 8 0	1.38c	6 5 0
Sheets, black, 24 gage	2.18c	10 0 0	2.35c	10 14 0	2.35c	10 14 0	2.18c	9 18 0
Sheets, galvanized, 24 gage, corrugated	2.91c	13 7 6	2.92c	13 5 0	2.92c	13 5 0	2.92c	13 5 0
Bands and strips	2.23c	10 5 0	1.50c	6 16 0	1.50c	6 16 0	1.38c	6 5 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.60c	7 5 0
Galvanized wire, base	2.94c	13 10 0	1.98c	9 0 0	1.98c	9 0 0	2.04c	9 5 0
Wire nails, base	2.51c	11 10 0	1.62c	7 7 6	1.62c	7 7 6	1.65c	7 10 0
Tin plate, base box 108 pounds	$ 4.51	0 18 6	.....	.....	.....	.....	$ 6.83	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported

			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.10	3 6 0	$17.49	445(2)	$16.46	590	$18.64	78
Basic pig iron	15.86	3 5 0	18.86	480(1)	15.07	540	21.03	88
Furnace coke	3.17	0 13 0	5.90	150	5.16	185	5.14	21.50
Billets	28.67	5 17 6	21.81	555	24.41	875	28.44	119
Standard rails	1.74c	8 0 0	1.48c	820	1.43c	1,100	1.51c	140
Merchant bars	1.55c	7 2 6	1.22c	675	1.27c	975	1.52c	141
Shapes	1.72c	7 17 6	1.17c	650	1.20c	925	1.49c	138
Plates, ship, bridge and tank	1.89c	8 12 6‡	1.51c	840	1.46c	1,125	1.71c	158
Sheets, black, 24 gage	2.29c	10 10 0	2.74c	1,520	2.39c	1,840	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.89c	13 5 0	3.42c	1,900	3.12c	2,400	3.78c	350
Plain wire	2.12c	9 15 0	1.71c	950	1.89c	1,450	2.32c	215
Bands and Strips	2.23c	10 5 0	1.38c	765	1.59c	1,225	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £21 10s 0d ($104.92) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

for billets, and steelworkers are no longer concerned about foreign competition. Prices of billets and bars from the Continent range from £5 15s ($28.06) to £5 17s 6d ($28.68). The British official price is £5 17s 6d ($28.67) but some unassociated firms are getting £6 ($29.28). The tin plate trade of South Wales is a good customer for local bars. In other directions, higher Continental prices are having their effect. Steel skelp from Germany costs £7 15s ($37.82) whereas supplies from the Staffordshire mills can be had at £7 5s ($35.38).

Scarcity of steel scrap is attracting attention. A small quantity is available, and Welsh buyers, who are most immediately concerned, have to pay the full figure of £3 7s 6d ($16.47). The fortunate holders of material occasionally ask and obtain £3 8s 6d ($16.71). Steel turnings are more commonly bought at £3 ($14.64) to £3 5s ($15.86) although melters as a rule are shy of this material. Germany and Poland are still taking large consignments of scrap from this country, at better prices than can be obtained from British buyers. A somewhat drastic suggestion is that the government should put an embargo on shipments of scrap from this country.

The decided improvement in tin plates is well maintained. Many mills are getting behind in their deliveries, and as the compulsory stoppage has now ceased to operate, every nerve is being strained to get the maximum output. Baldwins and Gilbertsons are each starting an additional mill. The price remains at 18s 6d ($4.51), though 18s 4½d ($4.48) is being accepted on many forward bookings.

The tone has improved in galvanized sheets, Indian demand reviving, as the congested stocks there are being reduced. There is some complaint in Scotland over lack of business, but generally, demand for thin sheets has improved. Makers have no difficulty in obtaining a higher price than £13 7s 6d ($65.27).

There is complaint of lack of business in Midland pig iron. Prices have become weak, and one firm, it is stated, is disposing of its stock much below cost of production. There is great need for specifications, and prices have become lower. Northampton No. 3 foundry has been sold at £2 17s ($13.91) and a small quantity of forge material at £2 13s 6d ($13.05). Similarly, Derbyshire forge pig iron has been reduced to £2 18 ($14.15) and foundry to £3 2s 6d ($15.25) and £3 3s ($15.37).

Belgian Mills Booked Well Ahead

BRUSSELS, June 1.—(*European Staff Service*)—Satisfactory conditions in the Belgian iron and steel market continue, and following the meeting of the Brussels iron and steel exchange of May 23, when prices had substantially hardened, the meeting of May 30 confirmed these prices. For the time being the market appears stabilized at the present level which is considered satisfactory in trade circles.

The demand at present is such that French, Belgian and Luxemburg works are producing to the limit of their authorized quota, and consequently the control exerted by the entente is making itself felt. It is reported that it is the intention of French and Belgian works to request that their quota be increased. However, in view of the fact that when Germany was exceeding her quota no increase was granted to her, it is practically certain that the request of the French and Belgian makers will be turned down by Germany. It is probable the directing committee of the entente will surmount the difficulty by fixing the basis quota for all members at a higher level than that which has been prevailing since April last year, when the quota was based on an aggregate annual production of 29,287,000 metric tons.

Franc—2.78c

Deliveries have become considerably extended, and it may be said that scarcely any works can offer delivery under one month, while in most cases the period extends over two or three months. For this reason numerous buyers will not now commit themselves on future business. The basis price for blooms is £4 8s ($21.25) per metric ton f.o.b. Antwerp. Two-inch billets are £4 16s ($23.30) and sheet bars are £4 18s ($23.75). At present there is a demand for sheet bars at the latter price, but producers will not now take orders under £5 ($24.25).

The average price for merchant bars is £5 15s ($27.80), but transactions are reported to have been made at £5 17s 6d ($28.45). Beams are £4 19s ($24) for normal sizes, and British sizes are £5 1s ($24.50). A French works is reported to have purchased 1500 tons of normal profile beams at £4 17s ($23.50).

Three-millimeter sheets are quoted at £6 13s ($32.20). The Belgium domestic price for wire rod has been fixed for June at 975 france ($27.10) delivered, which means a drop of 25 francs. On the other hand, it is anticipated that the export price, which at present is fixed at £5 15s ($27.80), may be raised by 2s 6d (60.00c) per ton. The margin between export and domestic prices in France for bars and semifinished steel now is comparatively small; the f.o.b. price of £5 15s corresponds to 653 French francs ($25.70), Thionville parity; domestic quotations is about 675 franc ($26.60).

Continent Producing Much Steel

LONDON, June 1.—(*European Staff Service*)—Activities of the iron and steel industries on the continent have reached the point where it is deemed probable that the production tonnage fixed by the steel entente will be increased. While April production figures indicate a drop, no doubt due to the effects of the Easter period, France, Belgium and Luxemburg have attained record figures for first quarter. Export business has played a great part in these activities, and prices have practically reached prewar levels. The hardening of continental prices has had the effect of reducing the volume of orders from British buyers. However, 3000 tons of sheet bars is reported to have been purchased from France at £4 7s 6d ($21.20) f.o.b. Antwerp, for delivery on the east coast of England. This is about 10s ($2.42) lower than the price now quoted for sheet bars, but it is understood that special concessions are made to British buyers and the tonnage is substantial. A French engineering firm has been awarded an order by a British firm for four 60-ton ladles and two 125-ton ladles.

In Great Britain export business is somewhat subdued. East coast hematite is being shipped to France at £3 14s ($18) per ton f.o.b. British port. P. & W. MacLellan, Ltd., Glasgow, have been awarded an order for a railroad ferry bridge in South America. Robert Stephenson & Co. Ltd., Darlington, have sold ten locomotives and ten boilers to the Central Argentine railroad. Bolckow Vaughan & Co. Ltd., Middlesbrough, have obtained a rail order for India, and the Sheepbridge Coal and Iron Co. has received an order for cast iron pipe for the British colonies.

On the continent export business is active, particularly in Belgium. Prices are firm and have reached a level satisfactory to producers. Merchant bars have been quoted at as high as £5 17s 6d ($28.35). It is reported the wire rod syndicate has decided to raise the export price from £5 15s to £5 17s 6d ($27.80 to $28.35). There has been a considerable demand for merchant steel from South America and the Far East. It is believed substantial potential demand still exists, due to the fact that certain merchant firms, believing that prices would not further harden, have kept back their orders. Substantial inquiries have been received for barbed wire from South Africa, Chili, and Argentine. New Orleans and Egypt have been in the market for baling buckles. French steelmakers are busy at home, but also are taking their share of orders for foreign markets. The Central European steel cartel, which is affiliated to the steel entente, has received an order for 30,000 tons of rails and track fastenings from Yugo-Slavia.

East's Next Move

Trunk Lines Ponder Request of Eastern Mills for Lower Export Rate

Pittsburgh, June 12.—The next move in the rate war between the Chicago and so-called eastern producers of iron and steel for Pacific coast business apparently is up to the executives of eastern railroads. The reduced rates from Chicago to New Orleans on iron and steel products for transshipment at New Orleans became effective automatically May 31 when the interstate commerce commission let the new Illinois Central-Redwood tariffs become effective.

Eastern carriers have before them the appeal for relief formulated at last week's meeting here of iron and steel producers who have been shipping to North Atlantic ports and who vision their trade as endangered. The complaint hinges on the theory that the same rail rate for 910 miles from Chicago to New Orleans as for 310 miles from Pittsburgh to North Atlantic ports is unfair.

Chicago producers are urged by traffic executives there to take advantage of the situation and regain the trade with the west coast lost when, just after the war, the rate structure rose to a point where Pittsburgh could ship more cheaply than Chicago. Efforts of the transcontinental railroads to void the long-and-short haul clause of the interstate commerce act had failed. Now the new rate of 61 cents and up for the rail-and-water haul from Chicago to California destinations makes possible, it is believed, a market that used to take as much as 200,000 tons of steel annually from Chicago.

At present the all-rail rate from Chicago to California points is $1 per 100 pounds, excepting tin plate which is 75 cents. The new rail-and-water rates include 61 cents per 100 pounds on semifinished material, strip, shapes, bars, hoops and bands; 66 cents on bolts, nuts and similar products, nails and some wire products; 71 cents on sheets, and 86 cents on wire fencing.

Independent producers are hit harder than the United States Steel Corp. and the Bethlehem Steel Corp., both having steamship subsidiaries. The latter producer was hit Jan. 1 when the commerce commission permitted eastern roads to reduce their export rates from 75 per cent of the domestic rate to 60 per cent; this is an experiment for 1928 to determine whether further export business could be stimulated.

The Detroit chapter of the American Society for Steel Treating has selected the following officers for the coming year: Chairman, F. P. Zimmerli, metallurgist, Barnes-Gibson-Raymond Co. Inc., Detroit; vice chairman, C. Upthegrove, associate professor of metallurgy, University of Michigan, Ann Arbor, Mich.; and secretary-treasurer, Joseph G. Gagnon, metallurgist, Hudson Motor Car Co., Detroit.

Enameled Ware Is Off

Washington, June 12.—April shipments of enameled sheet metal ware dropped, according to statistics furnished by the department of commerce. Following are comparisons by months:

1927	In dozens Total	White	Gray	Colored
April	337,181	175,187	143,257	18,737
Tot. 4 mos.	1,501,070	815,983	606,831	78,256
May	318,071	158,058	140,210	19,803
June	292,048	142,004	135,027	15,017
July	248,599	121,754	113,401	13,444
August	329,843	176,772	134,737	18,334
September	310,823	172,241	114,669	23,913
October	322,081	169,351	126,344	26,386
November	287,115	153,283	106,104	27,728
December	307,280	161,922	119,885	25,473
Tot., 1927	3,916,930	2,071,368	1,597,208	248,354
1928				
January	319,871	155,172	132,136	32,563
February	372,848	179,794	131,485	61,569
March	442,689	200,010	152,895	89,784
April	350,544	142,980	123,808	83,756
Tot. 4 mos.	1,485,952	677,956	540,324	267,672

Galvanized Ware Gains

Washington, June 12.—Production of galvanized pails and tubs in April made a substantial gain over March figures supplied by the department of commerce show. Monthly comparisons follow:

	PAILS, (In dozens)		TUBS, (In dozens)	
	Production	Shipments	Production	Shipments
April	183,812	198,711	30,423	33,785
Tot. 4 mos.	665,997	688,927	133,402	132,970
May	159,178	133,387	33,011	29,900
June	110,909	119,724	48,849	46,357
July	124,264	128,816	30,712	31,832
Aug.	133,309	148,148	44,632	48,291
Sept.	127,608	127,530	37,776	44,852
Oct.	151,495	141,101	39,086	41,368
Nov.	112,690	110,275	35,602	28,578
Dec.	93,273	90,254	22,090	17,013
Total 1927	1,668,725	1,688,162	425,080	421,161
1928				
Jan.	125,536	149,304	32,678	35,689
Feb.	165,757	162,153	28,513	26,334
March	173,592	175,472	50,904	45,205
April	208,544	201,119	31,545	36,452
Tot. 4 mos.	673,429	688,048	143,640	143,680

To Confer on Nipples

Washington, June 12.—A general conference on pipe nipples will be held here June 29 under auspices of the simplified practice division, department of commerce. The presentation of the commercial standards recommendations on steel will be made by Julian Armstrong and on wrought iron by C. T. Ressler.

Court Reverses Decision on Manganese Imports

On Nov. 23, 1927, the United States customs court of New York rendered a decision allowing imported ferromanganese containing 77.7 per cent manganese, 6.4 per cent carbon and 2.45 per cent silicon to come in under the tariff act as ferrosilicon, or as an alloy used in the manufacture of steel not especially provided for. According to the American Manganese Producers association, Washington, this decision opened the gates to slightly off grade imported ferromanganese at a tariff reduction of $21.97 per ton on such grade ferromanganese.

Believing this would have partially defeated the purpose of the manganese tariff act, the association on Dec. 20, 1927, filed an application for a rehearing with the United States customs court in New York. This motion was denied. Following this, the case was appealed to the United States Court of Customs Appeals and the appeal was argued in Washington. The association reports that on May 25, 1928, a decision was rendered by this court reversing the decision of the customs court, thus sustaining the theory of the appeal.

Fluorspar Report Ready

Washington, June 12.—The report on fluorspar which has been in preparation for some time by the iron and steel division of the tariff commission is now in the hands of the advisory board of the commission for its consideration before going to the commission itself for final action.

The manganese ore report is nearing completion by the iron and steel division for submission to the board. Plans are also being developed for the investigation of tungsten, which was requested by a senate resolution. Import analysis on this survey is now under way.

Berkshire Plant Passes

The historic ironmaking plant and iron foundry of the Barnum & Richardson Co. at Lime Rock, Conn., has been bought by Dard Hunter, New York, to be devoted to the manufacture of paper hereafter. Richmond charcoaol iron, one of the old brands produced in the Berkshire mountains, originally was made at Lime Rock in 1829. The concern originally was known as the Richmond Iron Co., was incorporated as the Richmond Iron Works in 1905 and later became the Barnum & Richardson Co.

Co-ordinate Efforts To Solve Steel Distribution Problems

EVIDENCE of steady progress in the march toward better co-ordination in the efforts of manufacturers to solve the problems of the steel industry was apparent at the meeting of executives of the flat rolled steel producers held last week at White Sulphur Springs, W. Va. The discussion indicated that the more thoughtful leaders of the industry are giving serious attention to distribution, sales and cost accounting, but that others engaged in producing sheets and strip steel are neglecting this important feature of their business.

One of the highlights of the meeting was the address by O. H. Cheney, vice president, American Exchange-Irving Trust Co., New York. Under the title "Who's Steel Industry Is it?", he emphasized the fallacy of believing that present ills are caused by excess capacity. He condemned production as an alibi for price cutting. In speaking of the one price policy, which he advocates, he declared "The one price policy revolutionized the retail business and it will revolutionize the steel business." Mr. Cheney's address is presented almost in full elsewhere in this issue.

Confidence and 100 per cent co-operation are needed in the sheet steel industry, which was described as being at a critical point by C. O. Hadly, vice president in charge of sales, of Alan Wood Iron & Steel Co., Philadelphia. Mr. Hadly, who presided at the opening session, quoted figures showing that sheet prices are $14 to $20 a ton under the 1924 level while raw materials are but $4 to $6 a ton under the figure of four years ago. F. C. Gifford, vice president of the Acme Steel Co., Chicago, responding for the strip steel manufacturers, said that frankness among competitors and ability to refuse unprofitable orders is necessary in the industry.

"Conditions prevailing today are self-created," declared George H. Charls, president of the National Association of Flat-Rolled Steel Manufacturers. "Manufacturers do not watch the ebb and flow of supply and demand and gage their output accordingly," he maintained.

Severn P. Ker, president, Sharon Steel Hoop Co., Sharon, Pa., pointed out that sales and distribution have collapsed under the same executives who have developed production so efficiently.

At a session at which H. T. Gilbert, vice president in charge of sales of the Republic Iron & Steel Co., Youngstown, O. presided, hearty approval was accorded a proposal that stripmakers contribute 10 cents for each ton of steel produced, to be used in the furtherance of trade extension work.

By this action, the stripmakers join with the sheet producers in work that has been carried on by the latter for several years. The results already accomplished by trade extension activities and the future possibilities in this field in the extension of present markets and discovery of new ones were brought out.

Lath Consumption Increased

In this connection, W. W. Galbreath, president of the Youngstown Pressed Steel Co., Youngstown, O., in an address on trade extension pointed out that the activities of the metal lath and pressed steel associations were increasing the consumption of steel sheets. Consumption of lath has increased from 10,000 to 100,000 tons annually in ten years, he said. He urged that strip and sheet makers work with associations whose members are fabricators of mill products.

J. J. Rockwell, vice president of the Crosby-Chicago Co., Chicago, and advertising counsellor of the trade extension committee, also gave an address on trade extension, explaining that research and sales engineering must accompany advertising in effecting successful merchandising. In the last three years during which trade extension work has been under way, he said, an average annual increase in consumption of more than 800,000 tons has been shown as compared with the preceding three years, although he pointed out that it is not fair to attribute all of this gain to advertising trade extension work.

Outlines Association's Activities

E. Theodore Sproull, secretary and treasurer of the National Association of Flat-Rolled Steel Manufacturers, outlined the functions and organization of the association.

The combination of the three associations—the National Association of Sheet and Tin Plate Manufacturers, the Hot-Rolled Strip Steel institute, the Cold-Rolled Strip Steel institute—with the Sheet Steel Trade Extension committee into the Flat-Rolled Steel organization means an annual saving of nearly $23,000, he declared. Membership now numbers 44.

Severn P. Ker presided at the Thursday morning session. Discussing "The Object and Purposes of the Association," C. R. Hook, vice president and general manager, American Rolling Mill Co., Middletown, O., said that just as stockholders have made huge investment in industry and expect permanently profitable returns, so also the association, demanding large expenditures in money and executives' time, is justified only if it enhances earnings and broadens markets. He maintained that the association must be so organized that its executives may concentrate on major problems.

At an executive meeting of the National Association of Flat-Rolled Steel Manufacturers, B. E. Kibbee, vice president of the Sharon Steel Hoop Co., and C. G. Thomas of the Thomas Steel Products Co., Warren, O., were elected directors.

Coke, Coal Output Drags

Beehive coke output in the week ended June 2 was 73,000 net tons, compared with 82,000 tons in the preceding week and 148,000 tons in the corresponding week of 1927, states the federal bureau of mines. For the calendar year to date the production of beehive coke has totaled 1,993,000 net tons; a year ago it was 3,911,000 tons.

Bituminous coal output in the week ended June 2 was 7,382,000 net tons, against 8,374,000 tons in the preceding week and 7,379,000 tons a year ago. Thus far in 1928 the bituminous coal mines have produced 200,700,000 net tons, compared with 243,142,000 tons a year ago.

At the recent election of the St. Louis District Foundrymen's club, Roy A. Jacobsen, Commercial Foundry Co., was chosen president. A. G. Kaiser, Bound City Foundry Co., was made vice president, and Leo J. Filstead, John C. Kupferle Foundry Co., secretary-treasurer.

Offering $1500 as Prizes in Essay Contest

Through the generosity of Alvin T. Simonds, president, Simonds Saw & Mfg. Co., Fitchburg, Mass., in offering $1500 in prizes, the American Management association is sponsoring a contest for the best essays on the subject "Reducing the Costs of Distribution." The purpose of the competition is to arouse a more general interest in economics as related to individual and general welfare and to increase the general understanding of the application of economic principles to business.

A first prize of $1000 is to be awarded to a business executive for the best essay, and another first prize of $500 to a senior in college or to a graduate student or an instructor of less than assistant professor grade for the best essay on the same subject. The contest closes Dec. 31, 1928. Information can be secured from the managing director of the American Management association, 20 Vesey street, New York.

More American Tools Are Taken by Italy

Imports of American machine tools into Italy in 1927 showed a large gain over 1926, but did not equal 1925, according to a cable from Commercial Attache Mowatt M. Mitchell, Rome. Swiss and German machine tool imports also have been growing, but not to the same extent. Good opportunities exist for further extension of American sales.

The gain in machine tool imports has taken place despite the fact the productive capacity of the Italian mechanical industries is now double the normal domestic demand, as a result of the great expansion of manufacturing facilities during the war period, and also despite the fact that foreign markets have been largely closed due to the high local production costs.

Farm Equipment Volume Shows Increase

Farm equipment production in 1927 was valued at $459,574,443, compared with $461,399,528 in 1926 and $391,812,436 in 1925. This shows a decrease in 1927 of 0.4 per cent from 1926 and an increase of 17.3 per cent from 1925, states the department of commerce.

Sales by manufacturers for use in the United States were $390,583,767 in 1927, against $364,751,042 in 1926 and $340,271,234 in 1925. Sales for export were $71,928,897 in 1927, against $78,992,525 in 1926 and $65,323,790 in 1925. Unsold equipment at the season's end accounts for the difference between these items and total production.

Combines, harvester-threshers, and tractors increased largely in output in 1927, indicating the trend of agriculture toward modern labor-saving devices.

Will Undertake Study of Heating Problems

Establishment of the Holland Institute of Thermology to conduct researches into various phases of the relation of humidity, temperature and circulation of air to public welfare has been announced by A. H. Landwehr, president, Holland Furnace Co., Holland, Mich. This organization will attempt to solve some of the heating and ventilating problems of the construction industry, study the effect of humidity upon various industrial products used in homes, and investigate problems connected with industrial housing and the efficiency and working conditions of workers in shops and offices.

"The institute will be given ample resources to teach the American home owner in a practical way the science of health heating and ventilation," Mr. Landwehr states. This object, of course, has many ramifications into numerous industries. A competent research engineer will be placed in charge, and the results of tests and investigations made by the institute will be placed before the public from time to time in the form of reports of its findings."

Locomotives Off Again

Washington, June 12.—Total shipments of railroad locomotives in May dropped slightly, according to the department of commerce. Following are comparisons by months:

Year and Month	Shipments Total	Shipments Domestic Steam	Shipments Domestic Electric	Unfilled orders Total	Unfilled orders Domestic Steam	Unfilled orders Domestic Electric
1927						
May	109	77	15	434	380	34
Total (5 mos.)	481	318	67	.....	.....	.....
June	89	63	18	400	333	31
July	60	35	18	399	299	57
Aug.	81	71	6	363	244	68
Sept.	127	86	7	271	167	49
Oct.	112	81	12	182	97	45
Nov.	52	31	7	145	74	42
Dec.	72	41	13	232	178	39
Total 1927	1,074	726	148	.....	.....	....
1928						
Jan.	47	22	23	222	161	38
Feb.	59	43	11	204	146	40
March	70	44	15	178	123	37
April	46	38	6	188	129	41
May	41	29	10	220	138	39
Total (5 mos.)	263	176	65	.....	.....	.....

Steel Rope Is Built with Interlocking Wires

Locked coil steel rope is being introduced in this country by the Darlington Wire Mills Ltd., Darlington, England, suitable for sinking purposes or for winding when there is little room between the cages in mine shafts. The rope is constructed with an outer covering of interlocking wires shaped similarly to a figure-eight, and, then a layer of semilocking wires shaped similarly to a rail section, the remaining internal wires being round. In case of fracture the wires are retained in their original position and do not damage the adjacent wires by laying across them. For a 2-inch rope 251 wires are used, each wire being galvanized before drawing to the desired gage and shape. According to G. L. Hannah, assistant manager of the company who is visiting various wire mills in this country, a 2.704-inch bridge suspension cable made of one strand of 127 wires each of 0.208-inch diameter has a specified breaking strain of 368 gross tons and an actual breaking strain of 370.05 gross tons.

Southwest Business Good

Bank clearings, bank debits, postal receipts and stock exchange transactions in the Southwest recorded new highs in May, states the Los Angeles chamber of commerce. Construction is said to range from normal to strong. Arizona cities are especially active. Wholesale and retail buying is conservative but steady. Among major industries, oil and motion pictures continue to mark time. The furniture industry is noticeably better. Unusual late rains throughout the Southwest, states the chamber, have greatly benefited crops without corresponding damage. Livestock continues steady at good prices. Copper mining reflects higher prices.

Extends Brief Deadline

Washington, June 12.—The date for the filing of final briefs in the case of the extension of the Pittsburgh, Lisbon & Western railroad to the Ohio river has been extended to June 25 by the interstate commerce commission. The line would give Youngstown, O., an outlet to the Ohio river.

On June 12 several hundred manufacturers of the state of Michigan made their annual visit to the University of Michigan, Ann Arbor, where they were the guests of the department of engineering research.

Many Americans Will Attend Third Foundry Congress in London

DURING the past winter the committee on international relations of the American Foundrymen's association, has been engaged mainly on preliminary arrangements for the Third International Foundrymen's congress which will be held in London, June 11-15, 1929, under the auspices of the Institute of British Foundrymen. The first International congress was held in Paris in September, 1923; the second was held in Detroit in September, 1926.

Officials of the Institute of British Foundrymen will be hosts to the 1929 congress. Plans which have been agreed upon provide for the American delegation leaving New York either May 11 or 15, 1929, in order to arrive in England in time for a three weeks' preconvention tour of England and Scotland which will include several days in London prior to the opening of the congress on June 11.

Visits of Historical Interest

On the preconvention tour such important British foundry centers as Birmingham, Manchester, Glasgow, Newcastle, Sheffield and Derby will be visited. Elaborate arrangements will be made by the different branches of the Institute of British Foundrymen for the entertainment of the visiting foundrymen on this tour. The program will include plant inspections and many sightseeing excursions. The latter will include points of great historic interest such as Warwick Castle, Shottery, Stratford-on-Avon, Guys Cliffe, Kenilworth Castle, Loch Lomond, Scotch Highlands, the Dukeries, Haddon Hall, Windsor Castle, etc. After the international congress, various continental postconvention tours are contemplated.

The itinerary of the preconvention tour has been arranged as follows:

Saturday, May 11—American foundrymen leave New York, if sailing on cabin steamer.
Wednesday, May 15—American foundrymen leave New York, if sailing on fast steamer.
Wednesday, May 22—Due to arrive in London.
Thursday, May 23—Proposed banquet in London.
Friday, May 24—In London. Whole day town sightseeing by motorcoach, visiting the principal places of interest.
Saturday, May 25—Whole day excursion by motorcoach to Windsor, Hampton Court, Eton, etc.
Sunday, May 26—In London. At leisure.
Monday, May 27—Leave London by rail for Leamington, thence excursion by motorcoach to Shakespeare country, visiting Warwick Castle, Stratford-on-Avon and Kenilworth Castle, returning to Leamington, thence rail to Birmingham.
Tuesday, May 28—In Birmingham. Plant visitation.
Wednesday, May 29—Leave Birmingham by morning train for Derby. Plant visitation.
Thursday, May 30—Leave Derby for Manchester.
Friday, May 31—In Manchester. Plant visitation.
Saturday, June 1—Leave Manchester by motorcoach for Keswick.
Sunday, June 2—Continue by motorcoach from Keswick to Glasgow via Penrith, Carlisle, Annan and Dumfries.
Monday, June 3—In Glasgow. Plant visitation.
Tuesday, June 4—Continue by motorcoach from Glasgow via the West Bank of Loch Lomond to Balloch, Inversnaid, Ardlui, Glen Falloch, Criandarich to Lochearnhead. Lunch at Lochearnhead hotel. Continue by motorcoach via Strathyre, Callander, Trossachs Pier, Doune, Stirling and Linlithgow to Edinburgh.
Wednesday, June 5—In Edinburgh.
Thursday, June 6—Continue by motorcoach from Edinburgh to Newcastle, via Lauder, Melrose, Abbotsford, Dryburgh, Jedburgh and Otterburn.
Friday, June 7—Continue by motorcoach from Newcastle to Sheffield via Ripon, Fountains Abbey, Harrogate and Leeds.
Saturday, June 8—In Sheffield district.
Sunday, June 9—Leave Sheffield by rail for London.
Monday, June 10—In London.
Tuesday, June 11—First day of International Foundrymen's congress.
Wednesday, June 12—Second day of congress. Excursion by motorcoach. Institute banquet.
Thursday, June 13—Third day of congress. Overseas banquet.
Friday, June 14—Fourth day of congress. Proposed excursion by special steamer down the River Thames to Margate, etc.
Saturday, June 15—Final day of congress. American delegation leave London for post-congress continental tours.

This program will be subject to considerable modification before it is finally adopted. During the week of the congress itself in London, what is expected to be the largest exhibition of foundry and shop equipment ever held in Europe, will be staged under the auspices of the British foundrymen's organization. At the sessions of the congress, papers will be read and discussed by the world's most prominent foundrymen.

It is expected that at least 200 American foundrymen will attend this big event next year. Thomas Cook & Son, 585 Fifth avenue, New York, has been appointed official travel agent of the tour.

Since the announcement of the tour at the Philadelphia convention of the American Foundrymen's association, a surprisingly large number of foundrymen have made inquiry as to details regarding the tour, indicating that marked interest is being displayed almost a year in advance of the event.

The committee on international relations now consists of H. Cole Estep, the Penton Publishing Co., Cleveland, chairman; L. L. Anthes, Anthes Foundry Ltd., Toronto; G. H. Clamer, Ajax Metal Co., Philadelphia; Vincent Delport, Penton Publishing Co. Ltd., London; Stanley G. Flagg Jr., Stanley G. Flagg Co., Philadelphia; and Verne E. Minich, American Foundry Equipment Co., Mishawaka, Ind. The personnel of the committee will be considerably enlarged during the next few months.

Exposition Will Display Foundry Equipment

Preparations are well advanced in connection with the International Foundry Trades exhibition which is to be held in London from June 5 to 15, 1929, to synchronize with the Third International Foundry congress. Support is being accorded to the exhibition by leading manufacturers in Great Britain and Germany and French, Belgian, American and other overseas companies also have taken important spaces. Everything is being done to insure that delegates and visitors to the international congress will have the opportunity of studying the display of foundry equipment and supplies. As far as possible the machinery will be demonstrated under working conditions.

The Foundry Trades' Equipment and Supplies association and the Institute of British Foundrymen both accord their patronage and active support to the exhibition. Full particulars may be obtained from the organizers, F. W. Bridges & Sons Ltd., Avenue Chambers, 4, Vernon Place, Southampton Row, London, W.C. 2.

Truck Shipments Decline

Washington, June 12.—May shipments of electric industrial trucks and tractors declined, statistics of the department of commerce show. This drop is the first this year. Following are monthly comparisons:

	Domestic		
1927	Tractors	All other Types	Exports
May	19	77	10
Tot. 5 mos.	58	449	48
June	20	97	23
July	12	73	5
August	3	87	2
September	8	66	5
October	11	81	17
Nov.	15	64	19
Dec.	8	77	11
1927 Total	135	994	130
1928			
January	5	98	9
February	15	86	18
March	18	97	16
April	9	122	6
May	8	95	13
Tot. 5 mos.	55	498	62

A patent for hardening and stiffening iron and steel by cold rolling was granted John Westwood in 1783.

CONSTRUCTION *and* ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

HARTFORD, CONN.—Pratt & Whitney Aircraft Co. has started on its expansion program in its plant, timed to meet the growing needs to accommodate increased production.

HARTFORD, CONN.—Royal Typewriter Co., 150 New Park avenue, plans to build a 5-story plant, 70 x 190 feet and 70 x 70 feet. Greenwood & Noerr, 847 Main street, are architects.

TORRINGTON, CONN.—Dayton Mfg. Co., manufacturer of automobile accessories and supplies, plans to build a 2-story plant.

BALTIMORE—International Harvester Co. of America, 606 South Michigan avenue, Chicago, plans to build a truck service station on a site recently acquired on Twenty-fifth street.

BROCKTON, MASS.—Brockton Edison Electric Illuminating Co., 42 Main street, has awarded the general contract for a 1-story power plant to H. F. Johnson, 248 Belmont street, Brockton.

LITTLETON, N. H.—Grafton Power Co., a unit of the New England Power associates, has petitioned the New Hampshire public service commission for the erection of a power generating unit here. Plans call for the building of two dams at Fifteen Mile Falls, near Littleton, and for the generating of electrical power for distribution in New Hampshire and Vermont. It would be one of the largest power projects in New England.

ELIZABETH, N. J.—F. L. Smidth & Co., 50 Church street, New York, plan to build a 1-story foundry 20 x 50 feet, on North avenue.

IRVINGTON, N. J.—Universal Metal Box & Products Co., Newark, N. J., will occupy a one-story brick factory at 316 Coit street, formerly occupied by the Metal Coating & Litho Co. The plant will be enlarged to include 20,000 square feet of floor space. The property is owned by the Oakland Purchasing Co., which will make the improvements.

KEARNY, N. J.—Western Electric Co., 195 Broadway, New York, plans to build a 6-story plant, 200 x 300 feet, at Central avenue and Lincoln highway.

NEWARK, N. J.—Great American Neon Corp. has been incorporated with $1000 capital to manufacture and deal in electric signs by Weiss & Wellman, Newark, attorneys.

NEWARK, N. J.—D. W. May Inc., 380 Central avenue, plans to build a 1-story plant for the manufacture of electrical equipment and automotive specialties.

PAULSBORO, N. J.—Vacuum Oil Co. has awarded the contract for a 2-story can manufacturing plant, 122 x 222 feet.

BROOKLYN, N. Y.—Koenep Iron Works, has been incorporated with $5000 capital by L. B. Feinberg, 329 Stone avenue, attorney.

BROOKLYN, N. Y.—Utrecht Heating Corp. has been incorporated with $5000 capital to manufacture and deal in gas and oil cooking devices by Barnett & Mintz, 26 Court street, attorneys.

BUFFALO—J. P. Devine Mfg. Co. has been incorporated with $500,000 capital to manufacture boilers, engines, etc., by Donovan & Raichle, Buffalo, attorneys.

METUCHEN, N. Y.—Public Service Electric & Gas Co., 80 Park place, Newark, N. J., has awarded the contract for a transformer station, 1-story, to Public Service Production Co., same address.

NEW YORK—York Perfection Cutting Machine Corp. has been incorporated with $30,000 capital to manufacture and deal in sewing

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Resale Equipment News

REAL ESTATE, buildings, machinery, equipment and receivables of the National Steel Castings Co., Montpelier, Ind., will be sold as a whole at public auction June 27, by order of the circuit court. The plant has a book value of $300,000. Frank H. Cutshall, Old National Bank, Fort Wayne, Ind., is receiver.

* * *

Plant and equipment of the Warren Iron & Steel Co., Warren, O., will be sold at public auction July 8. The company has been in difficulties for some time and the bondholders' protective committee is bringing about the sale.

* * *

Winnebago county circuit court, Oshkosh, Wis., has ordered judgment of foreclosure and sale against the Oshkosh Motor Truck Mfg. Co., maker of quadruple drive trucks, with reference to a bond issue of $150,000 and unpaid interest aggregating $174,547.34. The truck concern was be brought about because of the large placed in the hands of a receiver about a year ago and has been continuing its business under the direction of W. G. Maxcy, Oshkosh. Efforts to reorganize without foreclosure were unsuccessful, due largely to the fact that no agreement could number of holders of stock and bonds. The foreclosure sale, it is expected, will speed reorganization. The receivership has been conducted profitably, and no further difficulties are expected in the way of a successful reorganization.

* * *

Machinery and equipment of the Mather Machine Works, 2344 East 105th street, Cleveland, was sold at public auction June 12 by Todd & McCoy, auctioneers.The equipment included milling machines, lathes, shapers, grinders, screw machines and drill presses.

* * *

Assets of the Fuel Saving Heater Corp., 1125 Rockwell street, Cleveland, will be sold at assignee's sale June 15, by Gus Rosen, auctioneer. The sale will include shears, punches, brake, roller, seamer, crimper, beader, folder, electric drill, motor, drill press, band saw, lathe, grinder and finished and unfinished furnaces and stoves.

Sales Calendar

June 15—*Sale of equipment of Fuel Saving Heater Corp., Cleveland, by Gus Rosen, auctioneer.*

June 21—*Auction of Rickenbacker plants at Detroit.*

June 26 *and* 27.—*Machinery, equipment, etc., of E. V. Hartford Inc., Carbon place, Jersey City, N. J., by Industrial Plants Corp.*

June 27—*Buildings, real estate and machinery of National Steel Castings Co., Montpelier, Ind., at public auction.*

July 8—*Plant and equipment of Warren Iron & Steel Co., Warren, O., at public auction.*

Machinery

Large-Scale Buying Slackens Up, While Single-Tool Orders Remain Encouraging—Market Enters Summer Dullness

APPARENTLY the machine tool and equipment market is heading into the so-called summer slump, for there is evidence on every hand to show a general slowing up. There is almost a total absence of good sized lists either placed or issued. Automotive, railroad and general manufacturing all are showing a disposition to ease off. Nevertheless, single machine orders are numerous and make a sizable total. Buying by farm equipment interests in the Middle West still holds the attention of sellers in the Chicago territory. Several trade school requirements in the Pittsburgh district are being watched with interest, considerable miscellaneous machinery being involved. Crane buying again has slipped into a lower level, the chief business of the past week being in single orders.

New York, June 12.—While there has been a decline in machine tool buying, dealers regard business as being very fair, considering the season of the year. Little is noted in the way of sizable lists either placed or recently issued, but there appears a moderately good number of specifications for individual machines. Except for the New York Central, Erie and New York, New Haven & Hartford, railroads in this district are showing little interest, and in the case of those mentioned little buying has developed although a number of machines are pending in the aggregate. Upstate automotive companies are said to be manifesting more interest, however, and airplane manufacturers continue to buy. Pratt & Whitney Co. has recently sold three engine lathes, one 14-inch vertical service grinder, two die centers, two jig borers and a 5-inch production hand miller. The crane market is showing a little more life, although it is still far from active.

Worcester, Mass., June 12.—Machine tool buying shows little change in new business placed, but inquiries are more numerous from a number of industries. Automotive buying has slowed up, but not sharply, and a scattered number of tools from automobile makers continues to be placed in this market after an unusually good demand from this field. Three New England railroads also are inquiring for a varied list of tools. Metalworking plants are more interested in new equipment and a fair volume from this source is pending. Several woodworking and paper plants are also asking for new tools. A fair number of production lathes, a turret drill, two radial drills, and planer and borer were split between Connecticut and Western Massachusetts shops this week. Grinding machinery is moving steadily as has been the case for many weeks. Small tools continue to sell well and replacement orders are being taken.

Pittsburgh, June 12.—Outstanding purchases in the machine tool market are rare although sales involving single items keep up fairly well. Pennsylvania railroad bought a centerless grinder, is about to place an order for an internal grinder for Washington, and is working on bids for a large press. Baltimore & Ohio wants two drill presses for Glenwood, Pa., and the West Virginia state road commission, Charleston, W. Va., closed bids June 8 on a 16-inch lathe for Huntington. The largest inquiry of the week is that for the Baxter junior high school, Brushton, Pa. It involves six 9-inch lathes, a 12-inch shaper, 20-inch drill, hack saw, electrical grinder, tool post grinder, and four woodworking tools. The list from the New Castle, Pa. high school will comprise woodworking and tin shop equipment, also one lathe. The definite inquiry for the Clifford B. Connelly trade school here is not out yet, nor is that of the Washington, Pa., trade school. Fokker Aircraft Corp., Wheeling, W. Va., is not buying new tools but is moving some from Hasbrook, N. J. and may purchase good used equipment to piece out machinery for its Glendale, W. Va. plant. The contract for a 10-ton coal handling man-trolley bridge with 350-ton span for the Hamilton By-Product Coke Ovens Ltd., Hamilton, Ont., was awarded Heyl & Patterson Inc. An inquiry is out for two 200-ton power house cranes.

Chicago, June 12.—Releases against inquiry lists of the farm equipment and tractor manufacturers comprise the leading activity in the machine tool market in this district. John Deere & Co. has purchased additional equipment this week, and important inquiry still is outstanding. A tractor maker has issued a list for its works in this territory. A public utility in Chicago is inquiring for 15 lathes ranging from 16 to 36-inch, four milling machines and several shapers. Bids will be closed shortly. Specialty tools are moving well and light sheet-metal shop equipment is active. Fair inquiry is shown for used tools. The readjustment of prices on hacksaws, amounting to practically a 5 per cent increase, is being put into effect.

Cleveland, June 12.—Sales in the Cleveland territory have declined slightly, although dealers report current business better than had been anticipated for this season. Some decline during the next two or three summer months is naturally to be expected. A Cincinnati manufacturer of centerless grinders has increased prices approximately 10 per cent, effective June 6, and this has a tendency to drive in a number of orders before protection clauses expired. General sales are for one or two tools at a time, with the automotive interests buying almost nothing. Erie Foundry Co., Erie, Pa., is in the market for a 24-inch geared-head engine lathe, an 18-inch toolroom lathe, a 28-inch turret lathe, a horizontal boring mill with 3½-inch spindle, a 24-inch shaper, a circular cold cutting saw to cut 7-inch rounds, a motor-driven 6-foot heavy-duty radial drill, a 2-ton electric traveling crane and equipment for heat treating tools.

CRANE ORDERS PLACED

Among single orders were: 25-ton standard locomotive crane for Manville, N. J., plant of Federal Creosoting Co., to Browning Crane Corp.; used Northwest crawler crane for Leverty & Hurley, Bridgeport, Conn., to a local dealers; 10-ton electric overhead crane for F. J. Mullaney, West New York, N. J., to unnamed builder; 10-ton handpower crane for Electric Light and Power commission, Hudson, Mass., to New Jersey Foundry & Machine Co.; 10-ton overhead crane for Nazareth Cement Co., Nazareth, Pa., previously noted as awarded through Ford, Bacon & Davis, was placed with Whiting Corp., overhead crane purchased through a New York company for export, to Whiting Corp.; 10-ton electric soaking pit crane for Sparrows Point, Md., plant of Bethlehem Steel Co., to Morgan Engineering Co.; 25-ton locomotive crane for Stevens & Wood, New York, to Industrial Brownhoist Corp.; 10-ton coal handling man-trolley bridge with 350-foot span for Hamilton By-Product Coke Ovens Ltd., Hamilton, Ont., to Heyl & Patterson Inc.

CRANE ORDERS PENDING

Three 5-ton electric cranes for Covington, Va., plant and at least one electric overhead crane for Mechanicsville, N. Y., plant of West Virginia Pulp & Paper Co., New York; bids asked.

5-ton handpower monorail system for Brillo Mfg. Co., Brooklyn; bids asked.

2-ton electric traveling crane for Erie Foundry Co., Erie Pa.; bids asked.

Structural Imports Take Higher Duty

Washington, June 12.—E. W. Camp, commissioner of customs, in a decision just rendered has held that importations of iron or steel angles, channels, tees, etc., shall be dutiable under section 304 of the tariff act of 1922, instead of under paragraph 312, provided they are in sizes less than 3 inches.

"However," says the commissioner, "as the rate of duty under paragraph 304 is higher than that under paragraph 312 the higher rate should not be imposed upon merchandise entered for consumption or withdrawn from warehouse for consumption after 30 days after the date when this letter appears in the weekly treasury decisions."

Construction and Enterprise

(*Continued from Page* 1587)

machines, etc., by Shapiro & Silkawitt, 501 East 161st street, attorneys.

PORT CHESTER, N. Y.—Barsamy Corp. has been incorporated with $10,000 capital to manufacture and deal in metal novelties, by C. H. Dash, 1440 Broadway, New York, attorney.

PORT WASHINGTON, N. Y.—Purty Boat Works has awarded the contract for a 1-story boat building plant to Standard Erecting Corp., 551 Fifth avenue, New York. (Noted May 3.)

UTICA, N. Y.—Northern Tool Co. Inc. has been purchased by Wilbur R. Ralph, who plans to enlarge the facilities for the manufacture of valves and water gages.

BRADFORD, PA.—Bradford Machine Co. has been incorporated with $25,000 capital to manufacture machine parts, tools, dies, etc., by P. D. Bonner. Its plant will be located here.

CHARLEROI, PA.—West Penn Power Co., West Penn building, Pittsburgh, plans to build a 1-story garage, 83 x 140 feet, here. Sanderson & Porter, 52 William street, New York, are architects.

ERIE, PA.—Perry Iron Works contemplates an expansion program and is working on plans at present for a location.

ERIE, PA.—Erie Resistor Corp. has been incorporated with $25,000 capital to manufacture resistor products and other electrical appliances of carbon, graphite, copper, brass, etc., by G. P. Fryline, St. Marys, Pa.

FRANKLIN, PA.—The new foundry of the Chicago Pneumatic Tool Co. has started production.

LANGELOTH, PA.—American Zinc & Chemical Co., Clark building, Pittsburgh, has awarded the contract for a 1 and 2-story plant addition here.

LEBANON, PA.—Lebanon Iron Co. contemplates an improvement program for its plant.

MONONGAHELA, PA.—Pittsburgh Lamp & Art Craft has been incorporated with $25,000 capital to manufacture and deal in electric lamps, fixtures, etc., by A. O. Ross Jr., 7955 Division street, Pittsburgh.

PHILADELPHIA—Pennsylvania railroad has awarded the contract for structural steel for a warehouse to be built here to the Belmont Iron Works.

PHILADELPHIA—Swanger Bros. have been incorporated with $10,000 capital to manufacture and deal in machinery and tools by William E. Swanger, Hackettstown, N. J.

PHILADELPHIA—The Pennsylvania railroad has awarded a contract to Sinclair & Griggs, 1518 Walnut street, for the erection of a warehouse terminal at Tioga and D streets.

PHILADELPHIA—J. C. Kahn has awarded a contract for the erection of a manufacturing plant on Westmoreland street, west of Stokley street, to the Golder Construction Co., 16 Arch street.

PHILADELPHIA—Noe Co. Inc. has been incorporated with 325,000 capital to manufacture structural and ornamental iron and general metal work, by William R. McKinney, 4509 Spruce street.

PHILADELPHIA—H. A. Reif Mfg. Co. has been incorporated with $50,000 capital to manufacture and deal in tools, dies, machinery, etc., by Harry A. Reif, 4519 North Twelfth street, Philadelphia.

PHILADELPHIA—Lamont Gear & Machine Co. Inc. has been incorporated with $20,000 capital to manufacture and deal in gears, sprockets, and metal machine parts, by Robert Lamont, 1245 Medary avenue, Philadelphia.

PHILADELPHIA—Architectural Steel Engineering Co. has been incorporated with $50,000 capital to manufacture structural steel, ornamental iron and general iron and steel products by Daniel Boyle, 6418 Lawndale avenue.

PHILADELPHIA—J. Struthers Dunn & Co. Inc. has been incorporated with 22,000 shares no par value stock to manufacture and deal in mechanical and electrical devices by J. Struthers Dunn, 112 East Gowan avenue.

PITTSBURGH—Blaw-Knox Co. has been awarded the contract for the construction of an engine house for the Pennsylvania railroad at Little Creek, Norfolk, Va.

PITTSBURGH—Chromium Co. of Pittsburgh has been incorporated with 500 shares no par value stock to carry on a metal plating business by Norman Allerdice, 5727 Wilkins avenue, Pittsburgh.

PITTSBURGH—Riverton Steel Co. has been incorporated with $5000 capital to manufacture and deal in iron and steel and metal products, by George E. Matthews, Mt. Lebanon, Pa.

PITTSBURGH—Bluestone Electric Co. has been incorporated with 200 shares no par value stock to manufacture and deal in lighting fixtures and electrical specialties, by Joseph Bluestone, Terrace Court apartments, Pittsburgh.

READING, PA.—U. L. Bodey Co. Inc. has been incorporated with $5000 capital to manufacture and deal in vacuum devices, indicators, incinerators, etc., by Walter L. Bodey, 713 Wayne avenue, West Reading, Pa.

WEST NEWTON, PA.—Continental Boiler & Radiator Co. has been incorporated with $5000 capital to manufacture and deal in boilers, radiators, plumbers' supplies, etc., by W. J. Burkart, 518 North Pennsylvania avenue, Greensburg, Pa.

PROVIDENCE, R. I.—Nathan White Inc. has been granted a charter for incorporation to deal in metals, etc. Incorporators are Nathan, Jennie and Leonard White, all of Providence.

ABINGTON, ILL.—Abington Sanitary Mfg. Co. plans to expand its facilities for the manufacture of sanitary plumbing ware and equipment.

CHICAGO—Lapham-Hickey Co., 1625 West Pershing road, will build a one-story plant with boiler room.

CHICAGO—Crane Co., 826 South Michigan avenue, has awarded the contract for a plant at 2443 Kreiter avenue, east.

CHICAGO—Solray Co. Inc., 217 East Illinois street, has been incorporated with $25,000 capital to manufacture and deal in ultra-violet ray generators, by C. A. Futter.

CHICAGO—Titan Ornamental Iron Works Inc., 2237 West Thirty-seventh street, has been incorporated with $30,000 capital to manufacture and deal in ornamental iron work, bronze, brass, etc., by Fred N. Karabin.

CHICAGO—Pioneer Specialties Co., 5139 South Bishop street, has been incorporated with $10,000 capital to manufacture and deal in automobile accessories and specialties, by Andrew P. Blaezer.

CHICAGO — Electro-Chemical Engineering Corp., 621 South Kolman avenue, has been incorporated with $100,000 in preferred shares and $10,000 in common shares stock to manufacture, deal in and install electrical and chemical systems and appliances by Lewis O. Gunderson.

PEORIA, ILL.—King Machine Works, 506 Evans street, manufacturer of tools, dies, etc., plans to build a plant addition.

ANDERSON, IND.—Anderson Stove Works plans to build a 1-story plant addition.

BRAZIL, IND.—David W. Wood, receiver of the Crawford & McCrimmon Co., sold the property to the Mayer Bros. of Wisconsin. Work has already started on repairing the foundry building and machine shops and Mayer Bros. expect to have the concern operating in a short while to manufacture mining pumps and machinery along the same line as the former owners of the property.

ADRIAN, MICH.—Oro Mfg. Co. has been incorporated with $10,000 capital to manufacture and deal in steel, iron and other metals, by Edward C. Leininger, 910 Chestnut street.

DETROIT—Wolverine Plating Co., 459 Brady street, has been incorporated with $15,000 capital to manufacture and deal in metal specialties, by Jerry J. Callahan, 459 Brady street.

DETROIT—Briggs Mfg. Co., 11631 Mack avenue, has awarded the contract for a 5-story plant, 160 x 370 feet, to Otto Misch Co., 159 East Columbia avenue. (Noted May 31.)

DETROIT—Lifetime Metal Products Co., 440 Garfield street, has been incorporated with $15,000 capital to manufacture and deal in metal household products, by Moses Levitt, 2302 Hazelwood.

GRAND RAPIDS, MICH.—Structural steel for the power house for Owen-Ames-Kimball Co. has been awarded to Rochester Bridge Co.

GRAND HAVEN, MICH.—Grand Haven Stamping Works has awarded the general contract for a 1-story plant, 50 x 160 feet, to Jonker & Emery, local contractors. The building will be erected on newly purchased property.

GROSSE ILE, MICH.—Plans are being prepared for a naval airport here, by Verner, Wilhelm & Molby, Detroit. Buildings will consist of a hangar, 60 x 140 feet, with machine shop 40 x 70 feet and storage space, 20 x 40 feet in connection.

LANSING, MICH.—Victor Body Co. is moving equipment into its plant here from Grand Rapids and Ionia, in preparation for the production of automobile bodies for Reo Motor Co.

LANSING, MICH.—Leadingbrand Inc. has been organized to manufacture pumps, water softeners, etc., by S. E. Liedabrand, inventor of

the products and general manager of the concern. Manufacturing space has been obtained and production will start soon.

MANISTIQUE, MICH.—Architect D. E. Anderson, Marquette, Mich., is completing plans for an oil storage and distribution plant, 32 x 175 feet, for the Cleveland Oil Co. here. Virgil F. Hixson is manager.

OWOSSO, MICH.—Owosso Foundry Co., incorporated with $50,000 capital by H. C. Vance, 2498 Taylor avenue, has leased the plant formerly occupied by the Standard Machine Co. in Owosso, and will be in production by July 1. The company will manufacture permanent metal mold gray iron castings, chiefly for the automotive trade.

AKRON, O.—The plant addition of the Akron Lanp Co., now under construction, will be used for shipping and is expected to be completed by Sept. 1. (Noted June 7).

BIG PRAIRIE, O.—Monitor Sad Iron Co. sufferred damage to its foundry building in a fire recently. The foundry will be rebuilt. John and B. A. Lake are owners.

CINCINNATI—Milson Co., 118-120 West Pearl street, manufacturer of household products, has taken over a building at 906 Sycamore street, and will occupy it for a new plant. New machinery will be installed. Sidney F. Mills is president of the company.

CLEVELAND—Steel & Tubes Inc., 224 East 131st street, is inquiring for machinery and equipment for the manufacture of sheets for its proposed 1 and 2-story plant to be built at Ferndale, Mich. (Noted June 7.)

CLEVELAND—Steel Homes & Buildings Co. has been incorporated with $200,000 capital to succeed in business the McKay Fireproof Co. S. R. McKay of the latter company, is president of the new corporation, which will erect steel frame houses.

COLUMBUS, O.—Superior Die, Tool & Machine Co. suffered damage in a recent fire in the plant.

LIMA, O.—Ohio Steel Foundry Co., J. E. Galvin, president, is inquiring for a 10-ton jib crane and a 10-ton bridge crane for its foundry to be built here. (Noted June 7.)

PERRY TOWNSHIP, O.—Ohio Ferro Alloys Corp. has been incorporated with 3000 shares no par value stock by Lawrence G. Pritz.

STEUBENVILLE, O.—Steubenville Pressed Steel Co., E. M. Mentzern, general manager, is inquiring for machinery and equipment for fabricating steel and iron products.

STEUBENVILLE, O.—Steubenville Pressed Steel Co. has been incorporated with $25,000 capital by E. M. Mentzer, J. R. Kiel and A. E. Morse.

BARABOO, WIS.—A shop addition, 30 x 150 feet, and a stencil cutting room, 20 x 40 feet, will be erected by the Northwestern Refrigerating Co. here.

GREEN BAY, WIS.—Green Bay & Western railroad will build a new structure, 60 x 200 feet, as an addition to its terminal shops here. F. B. Seymour is president.

GREEN BAY, WIS.—A charter has been issued in Wisconsin to the Alwin Mfg. Co., capital stock $25,000, to manufacture and deal in machinery, metal products, etc. Incorporators are A. G. Krueger, Erwin Prust and G. W. Hay, 415 South Clay street.

JANESVILLE, WIS.—Northwestern Conveyor & Mfg. Co. plans an addition, 100 x 150 feet, to double its manufacturing area. Earlier this year the company expanded and purchased new equipment and the proposed enlargement exceeds the earlier program.

MADISON, WIS.—Babcock & Wilcox Co., Barberton, N. Y., has received the contract for all of the boiler equipment required for an addition to the central heating plant of the University of Wisconsin.

MARION, WIS.—The McMahon Engineering Co., Menasha, Wis., has completed plans for a municipal water works system costing $65,000 and the village board is about call for bids for the work. J. A. Arndt is village clerk.

MILWAUKEE.—Plans have been completed for a factory addition, 25 x 100 feet, and a pattern shop mezzanine floor addition, 40 x 120 feet, for the Rundle Mfg. Co., Twenty-seventh and Cleveland avenues, maker of plumbing and steamfitting materials supplies and fixtures. Charles Cahill & Sons, 214 Mason street, are consulting engineers.

MILWAUKEE—The suburb of Shorewood voted June 11 on the proposition of issuing bonds for the construction and equipment of a science building and a separate central heating plant for the Shorewood High school, East Capitol drive and Oakland avenue. Adolf Hafner, 290 Third street, is secretary. Architects Herbst & Kuenzli, 130 Wisconsin avenue, are completing plans.

NEENAH, WIS.—The C. R. Meyer & Sons Co., 50 State street, Oshkosh, Wis., is successful bidder for the work of erecting a new power house 50 x 50 feet, and a boiler house, 50 x 110 feet, for the Bergstrom Paper Co. here. Orbison & Orbison, Appleton, Wis., are the consulting engineers.

OSHKOSH, WIS.—Devereauz-Olson Co., Minneapolis, is low bidder for the construction of a new central heating plant at the Oshkosh State Teachers college here. Three 150-horsepower boilers are specified.

RACINE, WIS.—Architect J. Mandor Matson is revising plans for a 1-story addition, 74 x 76 feet, for the Armstrong Foundry Co., gray iron castings, 1530 Junction avenue. New bids will be taken after June 15.

REEDSBURG, WIS.—Architects Balch & Lippert, Madison, Wis., are taking bids for the erection of a garage and repairshop, 82 x 100 feet, for Phil R. Schewbe.

SOUTH MILWAUKEE, WIS.—The Bucyrus-Erie Co., steam shovels, dredges, etc., has contracted with Paul Riesen's Sons, 1018 Humboldt avenue, Milwaukee, for the erection of a 2-story pattern storage building, 65 x 180 feet. Plans are by Frank D. Chase, Inc., 720 North Michigan avenue, Chicago.

WAUKESHA, WIS.—Sealed bids were opened June 11 by the board of public works for the construction of a city sewage disposal plant. Plans are by Alvord, Burdick & Howson, Chicago. Bids were on the construction of the plant, tank equipment and accessories, pumping equipment, and cast iron pipe and fittings. A. R. Schuh is city engineer.

West Central

DES MOINES, IOWA—Municipal Utilities Co. plans the construction of a steam operated electric power plant at Emmetsburg, Iowa.

WATERLOO, IOWA—Gladbrook Oat Huller Co., Racine, Wis., will move to Waterloo in the fall. Thomas L. Fawick, president of the company, sold controlling interest in it to William Galloway, of Waterloo. A small manufacturing plant will be constructed in Waterloo.

STERLING, KANS.—Parsons Foundry & Machine Works plans to build a 1-story plant addition.

KANSAS CITY, MO.—George Thorne, 1507 West Twelfth street, contemplates forming a company for the manufacture of airplane accessories and materials for hangars.

KANSAS CITY, MO.—Expel Auto Radiator Works, Jay Briskin, president, will move here from Chicago to manufacture airplane accessories and automobile radiators. No definite site for the plant has been chosen.

JOPLIN, MO.—The foundry of Rogers Iron Works Co. suffered fire loss recently.

ST. LOUIS—Kinloch Brass Casting Co. has been incorporated by Fred S. Henderson, 208 North Broadway.

ST. LOUIS—Carter Carburetor Co. is building a new plant to provide additional manufacturing space for the company.

ST. LOUIS—Universal Cutter Co., 4567 Scott avenue, J. B. Gury, president, plans to build a 2-story plant. A. H. Norrish, 11 Dartford place, is architect.

ST LOUIS—St. Louis Tool & Mfg. Co., organized by George D. Hart and associates, 4920 Berthland road, plans the operation of a local plant for the manufacture of tools, dies, etc. (Noted May 31).

Southern States

BIRMINGHAM, ALA.—American Radiator Co. plans to build an additional plant in Alabama.

BIRMINGHAM, ALA.—Birmingham Slag Co. has awarded the structural steel contract for a slag plant to Ingalls Iron Works Co.

ST. PETERSBURG, FLA.—U. S. Hammer & Piston Ring Co. has plans progressing for its new foundry and machine shop. W. T. Baynard, 611 First avenue, is manager. (Noted May 31.)

NEW ORLEANS—Best Electric Co. Inc., 1001 Magazine street, plans to build a plant addition for the rebuilding of electrical ma-

chinery, etc. The addition will be 1-story, 29 x 50 feet.

BILOXI, MISS.—Property and disbursement officer, Mississippi national guard, Vicksburg, Miss., is receiving bids for construction of power plant and pumping facilities for state encampment grounds near Biloxi.

OKLAHOMA CITY, OKLA.—Oklahoma Wire & Iron Works, L. A. Bachle, manager, will build an addition to its shop, 25 x 100 feet, for fabrication of ornamental iron and wire.

OKLAHOMA CITY, OKLA.—Prest Machine Works, 303 East Grand street, has acquired a site for new machine shop building, 100 x 140 feet. J. B. Prest is owner and manager.

OKLAHOMA CITY, OKLA.—Star Mfg. Co., manufacturer of steel lease houses, tool boxes, etc., has moved to new plant at Pennsylvania and Fifth streets, 50 x 140 feet. D. H. Rowland is manager.

OKLAHOMA CITY, OKLA.—American Iron & Machine Works is building addition to plant, 50 x 70 feet, to include forge shop and heat treating room.

DALLAS, TEX.—Refinery Castings Corp. has been incorporated with $25,000 capital, by Frank E. Austin, Republic Bank building, Chas. R. Sibbitt and Dorothy C. Austin.

EL PASO, TEX.—Nichols Copper Co., 25 Broad street, New York, plans to build an electrolytic copper refinery.

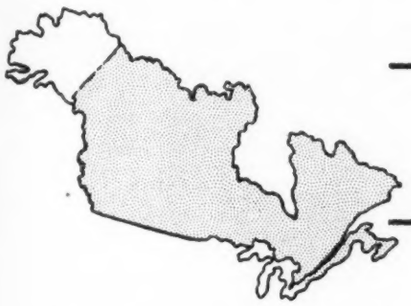
EL PASO, TEX.—Phelps-Dodge Corp. announces location of copper refinery employing 750 men at El Paso. Construction will start shortly on a site recently acquired.

FORT WORTH, TEX.—Fort Worth Machine Co., capital $20,000, has been incorporated by F. H. Campbell, manager, G. T. Gale and W. G. Layton to operate machine shop specializing in repair of cotton gin machinery.

FORT WORTH, Tex.—Fort Worth Well Machinery & Supply Co., 63 Jennings street, has acquired the Fort Worth Drilling Tool Co., 2301 South Main street, and expansion is contemplated.

HOUSTON, TEX.—Vulcan Electric Steel Foundry Inc. has been incorporated with $50,000 capital, by F. G. Sowden, 416 Fairview street, W. H. Houge and E. V. Corbett.

SUFFOLK, VA.—Spivey Bros. Inc. has been incorporated with $25,000 capital to operate a welding and machine shop, by S. S. Spivey, Washington and Poplar streets.



Canada

VANCOUVER, B. C.—General Steel Wares Ltd., 305 Water street, has started work on a plant and warehouse here. Building to be 1-story, 125 x 250 feet.

WINNIPEG, MAN.—Bids are being received by J. C. Holden, district engineer, Canadian Pacific railroad, for an addition to the freight car shops of the Weston shops here. Building to be 305 x 317 feet.

HALIFAX, N. S.—Nova Scotia power commission has awarded contract to the Foundation Co. of Canada Ltd., 746 Sherbrooke street, Montreal, Que., for the construction of a 30,000-horsepower hydroelectric power development plant on the Metsey river.

LONDON, ONT.—Imperial Oil Co., 56 Church street, is inquiring for complete equipment for its proposed 1-story repair shops, 50 x 50 feet.

NEW LISKEARD, ONT.—Standard Diamond Drill Co. is inquiring for machinery and equipment for the manufacture of diamond drills for its proposed new plant, 100 x 100 feet, for which the contract has been awarded to Hill, Clark & Francis.

OTTAWA, ONT.—A filtration plant to be constructed at Lemieux island, with a capacity of 34,000,000 gallons per day, is recommended to the city by Commissioner of Works A. F. Macallum in his report to the board of control.

PETERBOROUGH, ONT.—Canadian General Electric Co., head office at Toronto, Ont., will build an extension to its plant here to consist of two buildings, 100 x 328 feet and 90 x 100 feet, respectively.

SAULT STE. MARIE, ONT.—Preliminary work in connection with the new benzol plant for the Lake Superior Corp. is now under way, and the plant will be functioning by Nov. 1, according to J. D. Jones, general manager of the Algoma Steel Corp. The contract has been awarded to the Wilputte Coke Oven Corp., as noted previously. The plant is being built in the coke oven area at the mills, and is the first to be constructed in connection with the building program recently announced by President Dodd of the Lake Superior Corp.

TORONTO, ONT.—Smith Bros., 188 Duke street, manufacturers of automobile and truck bodies, etc., have purchased a site of two acres at Logan avenue and Keating street, where they propose to erect a manufacturing plant.

TORONTO, ONT.—Canada Metal Co. has acquired a site of 3.21 acres on the waterfront near the foot of Bathhurst street, formerly occupied by the Dominion Shipbuilding Co. It is the intention of the company to establish a plant at the new site to be operated in connection with its present Torotto plants.

WALKERVILLE, ONT.—Studebaker Corp. plans to re-equip its plant here and proceed with the manufacture of Studebaker and Erskine cars from parts made in Canada, according to A. R. Erskine, president.

WINDSOR, ONT.—Canadian Engine & Tool Co. Ltd., 10 Church street, has let contract to W. Pierce, 192 Parkington avenue, Sandwich, Ont., for a plant on Huron street here to be 1-story, 45 x 156 feet.

BONAVENTURE, QUE.—Langlais, Ricard & Royer, engineers, 126 St. Peter street, Quebec, Que., are completing plans and will call for tenders at an early date for the erection of a hydroelectric power plant and dam on Hall river near here for Cie Electrique de Pascarbo, Grand Mere, Que.

PRINCE ALBERT, SASK.—Plans are being prepared by J. A. Foester, city hall, for addition to city power plant.

REGINA, SASK.—General Motors of Canada Ltd. has decided to build an extensive assembly and manufacturing plant here. A site of 38 acres has been purchased. It is hoped to have the building in operation by Dec. 1.

New Trade Publications

INDUSTRIAL FURNACES—Ryan, Scully & Co., 3711 Wissahickon avenue, Philadelphia, has issued a bulletin on its drop forging furnace for gas or oil firing. It is illustrated and contains specifications of various sizes.

NICKEL IRON CASTINGS—International Nickel Co., New York, is issuing the second of a series of bulletins on gray iron castings with nickel alloying, to insure dependable properties. This bulletin treats on uniform structure.

STEEL WINDOW SASH—Bogert & Carlough Co., Paterson, N. J., has prepared a catalog of its projected window sash. It features a bronze ventilator guide. It is illustrated and contains specifications, detail drawings and data for architects, engineers and specification writers.

LIQUID LEVEL GAGES—The Bristol Co., Waterbury, Conn., has issued a catalog of its gages for recording levels of liquids, replacing a former issue. This device is used in industrial and other plants and furnishes a record of liquid levels. It is illustrated to show construction and operation as well as a number of actual installations.

GRAPHITIC STEEL—Gunite Corp., Rockford, Ill., tells the story of its new graphitic steel in a current booklet. This metal has been developed to meet requirements for a metal with strength, toughness, rigidity and wearability under friction. It is illustrated by microphotographs to show physical characteristics of the metal.

OIL HEATING—Oil Heating Institute of New York, 420 Madison avenue, New York, composed of a number of manufacturers of oil burning equipment and oil producers, has issued a booklet designed for the information of architects and of interest to all concerned with oil heating. The booklet is part of the service of the institute as a bureau of information on a noncommercial basis.

ELECTRIC LIGHT HANGERS—Thompson Electric Co., Cleveland, joins the movement in opposition to adoption of the metric system of measures, in a booklet entitled "Standardization and System." Following presentation of its views on this subject several pages are devoted to discussion of the company's safety lowering switch hanger and its shock absorber, designed to save breakage of bulbs.

TAPS AND DIES—National Acme Co., Cleveland, is mailing a catalog of its taps and dies. It is the first complete catalog by this company, covering its opening dies, collapsible taps and allied equipment. In addition to being a catalog the publication is a parts book and contains a preliminary announcement of the chaser grinding fixture the company is about to put on the market.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 3-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh carload discounts. Less carloads 4 points less

STEEL (Lap Weld)

2 and 2¼-inch	27 off
2½ and 2¾-inch	37 off
3-inch	40 off
3¼ to 3¾-inch	42½ off
4 to 13-inch	46 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+18
1¾-inch	+ 8
2 and 2¼-inch	2 off
2½ to 3-inch	7 off
3¼ to 4½-inch	9 off

(Note—Additional discounts of one 10 to two 10's and one 5 now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts.
(Including straight taper plates)
Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts.
(Sketches cannot be sheared with reentrant angles)
Additional extra ..... .20c